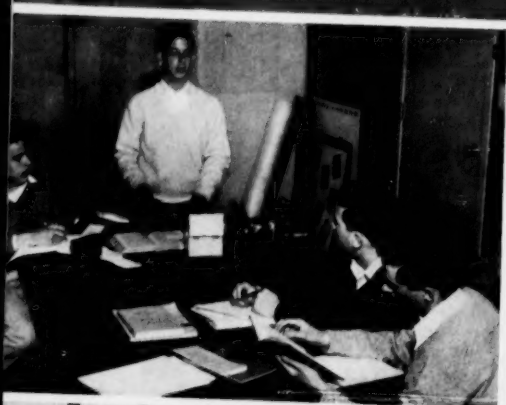


Chemical Week—

March 26, 1955

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Target: better fuels, lubricants, construction materials for soaring rocket output p. 48

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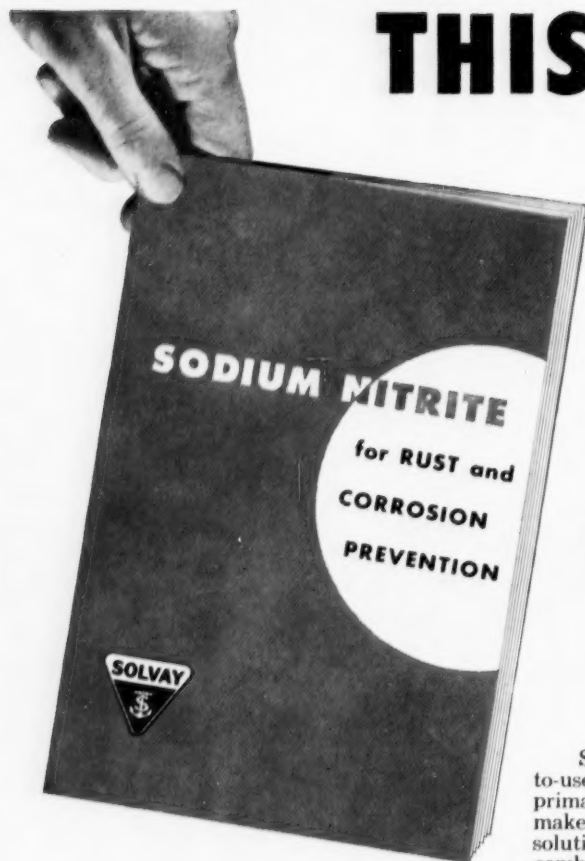
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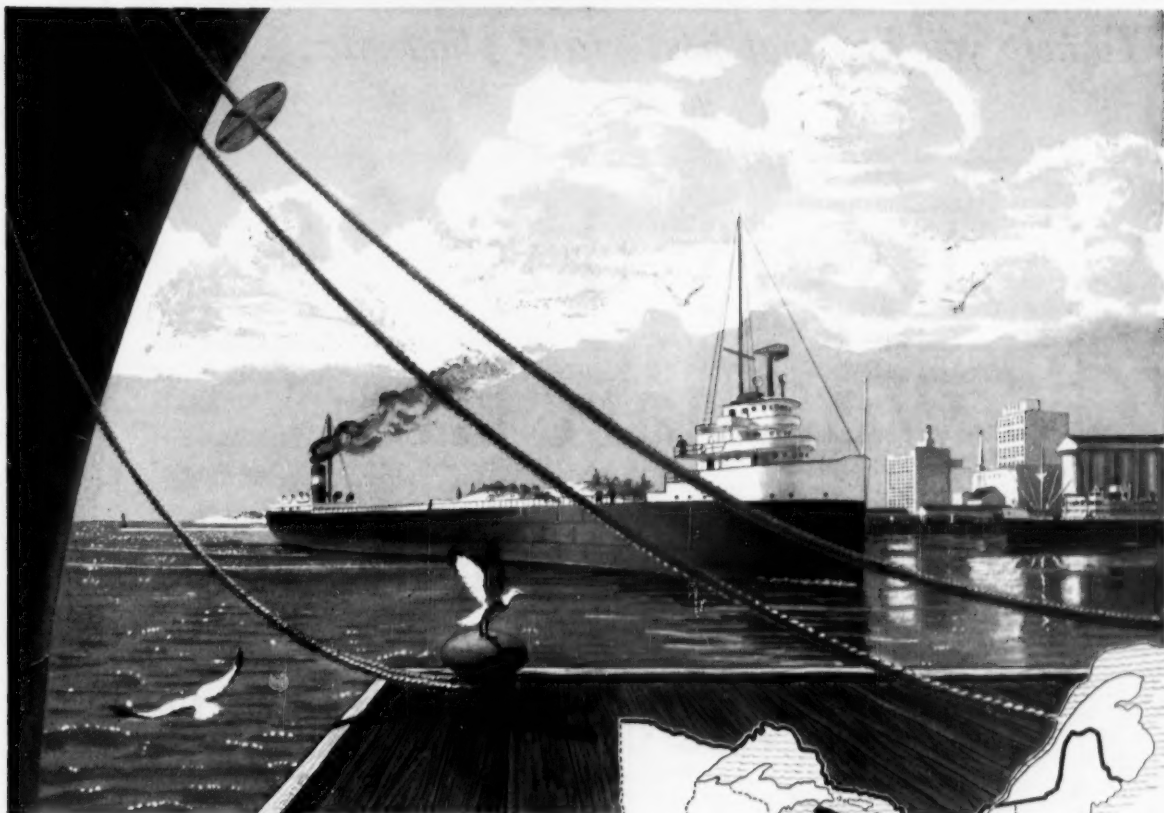
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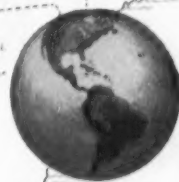
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Chemical Week

Volume 76

MARCH 26, 1955

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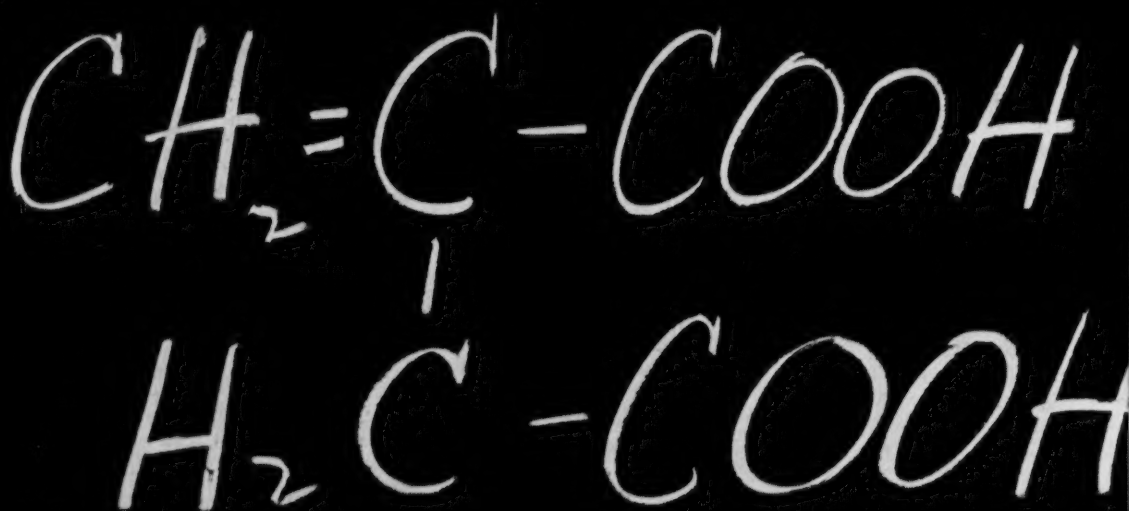
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OPINION

You Don't Eat It

TO THE EDITOR: As the manufacturers of the toothpaste used in the Indiana research referred to, we were somewhat surprised and perplexed by Mr. C. D. Hooker's letter relative to fluoride-containing toothpaste (CW, Feb. 26).

The general tone of his letter suggests that the addition of fluoride to a toothpaste involves the same problems that would be encountered in the addition of fluoride to salt. We would like to point out that such is not the case. Salt is a food. It is intended to be ingested and, of course, it is ingested. On the other hand, toothpaste is not a food, it is not intended for ingestion, and it is not ingested in any appreciable quantity. Furthermore, the standard fluoride toothpaste used in this research work exerts its beneficial effects not from its being swallowed but from its being applied to the external surfaces of the teeth through brushing.

It must be realized that neither the manufacturer nor the Food & Drug Administration would permit the marketing of any toothpaste that constituted a threat to the health of the user.

O. M. GALE
Manager
Public Relations Division
The Procter & Gamble Co.
Cincinnati

Depends on the Type

TO THE EDITOR: Mr. Sydney Prerau states (Feb. 26, p. 54) that fringe benefits, including company-paid life insurance, are *not* taxable to the employee. According to our reading of the Internal Revenue Code of 1954 . . . this is not true with respect to all

company-paid life insurance. It is true in the following cases:

1. Current term group life insurance, even though the employee may convert to a permanent form.
2. Permanent group life insurance, if the employee loses his rights when leaving the company.
3. Ordinary life insurance when the employer is the beneficiary.
4. Annuity plan qualified under Section 403 (b) of the Code, if the employee's rights are forfeitable.

It is not true in the following cases:

1. Premiums paid by an employer on group permanent life insurance providing paid up insurance, if the employee retains his rights after leaving the company.
2. The part of premiums allocated to current life insurance protection when group permanent life insurance reserves are accumulated for pension purposes.
3. The reserve value of accumulated pension reserves when they are applied to paid-up insurance, or continued term insurance.
4. Ordinary life insurance when the employee can designate the beneficiary.
5. Annuity plan, not qualified under Section 403 (b) of the Code, when employee's rights are nonforfeitable, except for failure to pay future premiums.

Please get me off the hook on this subject because your readers have questioned me at length on this. . .

JOHN C. NICHOLS
Treasurer
Wurster & Sanger, Inc.
Chicago

Reader Nichols is correct in his statements—and so is Mr. Prerau. In his comments, Mr. Prerau was referring only to that type—and the most common type—of company-paid insurance known technically as group term insurance. This is a fringe benefit and nontaxable.—Ed.

Magnesium Backer

TO THE EDITOR: I have just read your interesting CW report on titanium (Feb. 19). It mentions that the 81-mm. mortar base plate can be made of titanium and weigh only 22½ lbs. The same base plate can be made satis-

factorily in shock-resistant alloy magnesium and only weigh 19 lbs., saving 3½ lbs. on the infantryman's back.

I don't doubt that the use of magnesium, as compared with titanium, would also lighten the load on the taxpayer's back. . . .

J. E. PEPALL
Magnesium Company of Canada, Ltd.
Montreal

Pyrazine Route

TO THE EDITOR: Your news article "Testing a Theory" (p. 70, March 12) issue was of great interest to me.

In 1948 when confronted with the problem of preparing large quantities of 2, 5-dimethylpyrazine, I found that the available synthetic procedures were too lengthy and costly, and I decided to investigate. This led to my master's thesis, "A New Synthesis of 2,5-Dimethylpyrazine." Isopropanolamine, a low-priced starting material, is oxidized in acid solution to aminoacetone. After neutralization, followed by gentle oxidation again, the pyrazine compound is obtained in high yield and purity.

This may very well be the Wyandotte new manufacturing process upon which you speculate.

ROBERT FEIGIN
Technical Director
Globe Compound Co., Inc.
Waterbury, Conn.

Spencer Not Alone

TO THE EDITOR: On p. 16 of the Feb. 19 issue appeared an item that stated that the new Acheson Dispersed Pigments (Texas) Co. (Orange, Tex.) process plant "is due onstream next week," and that the polyethylene for this plant would be furnished by Spencer Chemical Co.

This plant did not begin operations that week. . . .

While it is true that polyethylene resin will be furnished to our plant by Spencer Chemical Co., we also anticipate purchasing polyethylene from all of the other producers, in addition to Spencer. . . .

J. S. THOME
Vice-President, General Manager
Acheson Dispersed Pigments Co.
Philadelphia

Right. We were several weeks ahead of the news. The plant came in, however, on March 10.—Ed.

Index Available

Copies of the Chemical Week index for Vol. 75, July-Dec., 1954, are now available from Chemical Week, Reprint Dept., 330 W. 42nd St., New York 36, N. Y., free of charge. Subscribers not already on the mailing list to receive indexes will be added to the list upon application.

DATES AHEAD . . .

American Drug Manufacturers' Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., April 13-14.

Conference on Biological Waste Treatment, Manhattan College, New York, April 13-15.

The American Oil Chemists' Society, annual meeting, Roosevelt Hotel, New Orleans, April 18-20.

Scientific Apparatus Makers Assn., annual meeting, The Greenbrier, White Sulphur Springs, W.Va., April 24-28.

German Industries Fair, Hanover, West Germany, April 24-May 3.

Chlorine Institute, spring meeting and golf tournament, Seaview Country Club, Absecon, N.J. April 26-27.

American Institute of Chemical Engineers, national meeting, Shamrock Hotel, Houston, May 1-4.

Electrochemical Society, Sheraton-Gibson Hotel, Cincinnati, May 1-5.

American Pharmaceutical Assn., annual convention, Miami Beach, Fla., May 1-6.

Society of the Plastics Industry, annual meeting and conference, cruise on the Queen of Bermuda, May 7-15.

American Institute of Chemists, annual meeting, Chicago, May 11-13.

Automation Symposium, Michigan State College, East Lansing, May 12-13.

Chemical Specialties Manufacturers Assn., midyear meeting, Drake Hotel, Chicago, May 15-17.

Chemical Progress Week, May 16-21.

Rubber Division, Chemical Institute of Canada, annual conference, Sheraton Brock Hotel, Niagara Falls, Ont., May 20.

Chemical Market Research Assn., annual meeting, Plaza Hotel, New York, May 18-19.

Air Pollution Control Assn., annual meeting, Detroit, May 22-26.

Institute of Paper Chemistry, executives' conference, Appleton, Wis., May 26-27.

Chemical Institute of Canada, annual conference, Quebec City, May 30-June 1.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

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Our Colleges and Universities Are Living on Borrowed Time

... time borrowed from underpaid faculty members

The chart on this page tells a story of profound importance to every American. It is the story of the financial beating our college and university faculty members have been taking in the past 14 war and postwar years.

On the whole, this span of 14 years has been one of great and growing prosperity. But, as the chart shows, our college and university faculty members have, as a group, had less than no share in it.

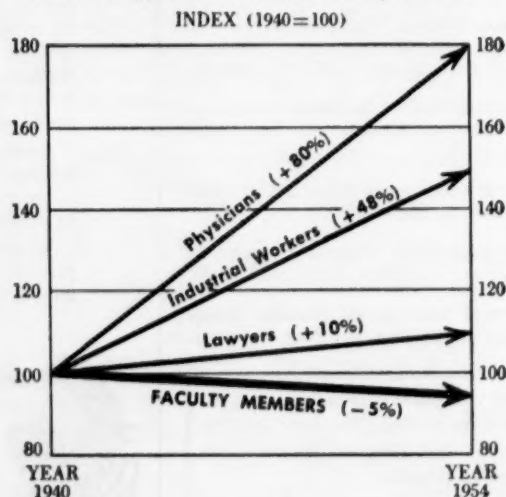
During this period, from 1940 through 1954, the real income of the average industrial worker (that is, what his wages would purchase in goods and services) has increased by almost one-half. Among professional groups, physicians have enjoyed an increase of about 80 per cent in their real income. Lawyers, far less favored financially, have had an increase of about 10 per cent. But faculty members have not only had no increase at all; over these years of prosperity their average real income has fallen by 5 per cent. These figures do not take account of the increase in taxes since 1940.

Senior Teachers Hardest Hit

These figures are, of course, averages. For some groups of faculty members it has been better; for others worse. It has been particularly

hard on senior faculty members. Between 1941 and 1953 their salaries lost about 8 per cent of their purchasing power. Being deeply committed to their careers they could not respond to alternative employment opportunities as readily as could their junior colleagues. For junior faculty members there was some increase in real income between 1941 and 1953 but only about half as much as the average for the nation.

What's Happened to College Faculty Salaries*



* Real Income before Taxes.

Source: Council for Financial Aid to Education; U. S. Dep't of Commerce; U. S. Dep't of Labor.

Public Colleges Fare Better

There are also marked differences in the average financial reward received by faculty members in different types of colleges and universities. A recent study by the Council for Financial Aid to Education indicates that, in the last academic year, 1953-1954, teachers in privately endowed, independent colleges and universities were paid an average salary about \$1000 less than that paid to faculty members in tax-supported institutions. The same study indicates that salaries far below the average are especially common for faculty members in the small private liberal arts colleges. This study found that during the last academic year the average salary of all college and university faculty members was about \$4700.

The special difficulties under which the independent colleges and universities, and particularly the independent liberal arts colleges, are laboring to get back on their feet financially have been discussed in previous editorials in this series. These difficulties underline the need of special help for these institutions to which business firms are now contributing in increasing volume. However, the problem of providing better salaries is not peculiar to any particular type of institution.

Faculty Members Not Greedy

It is not easy to prescribe a precise standard of fair pay for college and university faculty members. This is partly because they put less weight relatively on money rewards than they put on rewards of scholarly accomplishment and prestige. Consequently, they have consistently been willing to work for very modest salaries in relation to the intellectual ability, education and application required. Obviously, however, it is the dictate both of fairness and good judgment to see that faculty members are given a roughly proportionate share in the general prosperity. Indeed, their crucial role in our society could be made to justify a larger share than this.

There is no way to know with any degree of precision what the underpayment of our college and university faculty members over the past 14 years has actually cost the nation in terms of reduced quality of intellectual performance of those institutions. One reason is that the damage has been minimized by the devoted services

of many faculty members who have loyally stuck to their jobs in spite of the great financial discouragement.

It is obvious, however, that, if no grave deterioration in the intellectual performance of our colleges and universities has occurred so far, it is because we have been living on borrowed time. It is time borrowed from faculty members who have, in effect, been subsidizing these institutions by their financial sacrifice. This arrangement is not only a menace to the cultural and intellectual life of the nation, it is also a menace to our national security in a time when successful national survival may well depend in peculiar degree on the full development and utilization of our intellectual resources. We depend on our college and university faculties pre-eminently to provide this development. Adequate financial reward for such service is an elementary form of national insurance.

Many of our colleges and universities are working hard to improve the financial lot of their faculty members. Business firms are also playing an increasing role of providing the necessary financial assistance. The methods being used by business for this purpose will be the subject of another editorial in this series. However, vastly more must be done, and quickly, to stop the financial beating being taken by our college and university faculty members if the nation's welfare and safety are to be properly protected.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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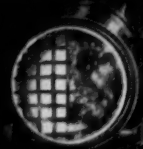
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NEWSLETTER

Fourteen chemical process plants in the Pacific Northwest this week suffered a power curtailment by Bonneville Power Administration. Interruptible power was cut back a third during the high daytime load hours because of declining stream flows in the Columbia River basin and prolonged cold weather, which has boosted domestic demand.

Most of the affected plants—which include Alcoa, Kaiser, Reynolds, Electro-Metallurgical, Pennsalt, Keokuk Electro-Metals, Pacific Northwest Alloys, Rayonier, Crown Zellerbach and Victor Chemical—will make up for the shortage by buying three-times-as-costly hydroelectric power from British Columbia or steam-generated power. This would cost the 14 plants about \$15,000/day in added energy costs.

•
The “guaranteed annual wage” demand this week moved a step closer to the chemical process industries. The CIO United Glass Workers will demand such a program in its bargaining this spring with Libbey-Owens-Ford and Pittsburgh Plate Glass—“to soften the impact of technological changes,” in the words of Burl Phares, the union’s international president.

•
Money from Uncle Sam—recommendations, requests, and approvals—was in the Washington spotlight this week:

- Food & Drug Administration asked for. But in okaying the boost, the House Appropriations Committee told FDA to stick to seeking health violations rather than economic ones such as short weight and substandard products.

- Bureau of Mines will ask Congress for \$1.25 million to operate its research station at Rifle, Colo. Previously, the Administration had planned to put the plant into stand-by.

- Interior Dept. thinks one of the water-desalting processes developed under its sponsorship may justify a \$250,000 pilot plant. The process, developed by a Swedish inventor, involves a phase separation near the critical pressure and temperature.

- While approving a 37% increase in U.S. Public Health Service’s air and water pollution research budget (making a \$2.8-million total), the House Appropriations Committee cut out \$1,145,000 requested for water pollution control. Reasoning: the current control law is almost unenforceable; but if Congress puts teeth into it as requested (*CW*, March 19, p. 22), USPHS can come back for the money.

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You can look for a report on U.S. sulfur resources. Government men are now summarizing the data, expect to publish a compilation of their findings shortly.

•
Coal hydrogenation technology may soon get a big boost from the Bureau of Mines. Heretofore it has used a two-stage process in its Fischer-Tropsch studies, but now it has developed a high-temperature, one-step method. It hopes to eliminate the bugs in its pilot plant within the year. If successful, says the bureau, it will mean “noteworthy simplification” of conventional processes.

Also, the bureau has developed a new, "exceptionally durable" catalyst for hot-gas-recycle syntheses. It may "substantially reduce" cost of liquid fuels obtained by gas synthesis.

•

Another possibility: bacitracin-containing toothpastes. The National Institute of Dental Research finds it one of the most active antibiotics in inhibiting dental caries; moreover, it seldom causes allergic reactions and few bacteria develop a resistance to it.

But formidable hurdles bar the way of nonprescription sale. FDA has been markedly reluctant to approve any such products.

•

A federal antipollution proposal that failed is now being considered by a state legislature. A North Carolina senate bill provides five-year tax amortization of pollution control facilities built after Jan. 1 of this year. It further provides exemption of such facilities, next year and thereafter, from local property taxes.

•

Ammonia capacity—growing fast in the U.S.—may get an additional boost in Canada, too. Canadian Industries (1954) Ltd. is reportedly calling for tenders on an ammonia plant; probable location: Millhaven, Ont., where the firm has a Terylene fiber plant. Final decision on whether to build will be made in a few months.

And a new company, Canadian Hydrocarbons Ltd., plans an 80-tons/day ammonia unit as part of a \$1.5-million, 600-tons/day synthetic fertilizers plant at Winnipeg. The firm was incorporated by Winnipeg & Central Gas Co. as a development corporation, and stockholders in the gas company have been given first chance to buy stock in the enterprise.

•

Meanwhile, plans broke down for the long-touted \$350-million pipeline to carry natural gas from Alberta to the eastern provinces. Negotiations between Canada's federal government and Trans-Canada Pipe Lines Ltd. foundered on disagreement over the extent to which the government should participate in the venture. Next likely step: an attempt to finance the project privately.

•

Jefferson Lake Sulphur last week started up its new 150-long-tons/day sulfur recovery plant at Manderson, Wyo. The plant, designed for potential expansion to 450 tons/day, manufactures sulfur from hydrogen sulfide recovered from sour natural gas, which Jefferson Lake buys on long-term contract from Socony-Vacuum and other oil companies that operate a nearby gasoline plant.

•

A new fermentation process using low-cost carbohydrates now permits fermentation itaconic acid to compete on a commercial basis with the synthetic product. Chas. Pfizer, which developed the method, will make itaconic at both Brooklyn and Groton, Conn., will also introduce—on a planned and sustained basis—other chemicals made by the process.

•

Colored automobile tires (*CW Newsletter, March 12*) will make their debut next month. U.S. Rubber will introduce white-and-blue, white-and-green, and white-and-brown tires, at premium prices, to blend with the color styling of car bodies. The color extends from the outer edge of the white sidewall to the top of the tread, which remains black.

•

. . . The Editors

A highly reactive chemical intermediate

H_2C

Jefferson ETHYLENE OXIDE



Produced by specialists in "essential chemicals from hydrocarbon sources."

H_2C

Made to traditional high standards of quality, Jefferson's Ethylene Oxide is used as a starting material in the manufacture of acrylonitrile and nonionic surface active agents, and as a sterilizing agent and fumigant.

It is in general a very reactive chemical intermediate.

Available immediately in 4,000 and 10,000-gal. tank cars and 400-lb. net (ICC 5 P) drums. Samples for your preliminary investigation.

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Ethylene Carbonate
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**Dependable Source
for Chemical
Raw Materials**



K. V. Coombes, General Purchasing Agent, Brown Co.

**"We're determined to lead the parade...
and we look to our suppliers to help us"**

— K. V. Coombes, General Purchasing Agent, Brown Co.

"ARE WE quality conscious?" asks K. V. Coombes, General Purchasing Agent, Brown Co., Berlin, N.H. "I'll say we are! Purchasing is keenly aware of the challenge of competition. To lead the parade, our paper products have to be the best. That makes top-quality raw materials a must!

"We not only seek out the best sources for the raw materials that we do not make ourselves, but we want to know the vital statistics on our sources: What producing facilities do they have? . . . Do they own or control their own sources of raw material? . . . What

steps do they take to insure quality control? . . . Are they research-minded?

"Wyandotte has satisfied our requirements on all these points—even to owning their own sources of supply, limestone quarries, salt deposits, coal mines.

"Their Soda Ash, which we purchase, is always uniform. In the New England territory, their technical representative works very closely with us. We feel, too, that their recent expansion in research can be most helpful to concerns like ours in the years to come."

If you're gearing your business with an eye to the future, and use raw material chemicals, let Wyandotte help you. Wyandotte Technical Service extends to every industrial area of America. Write for prices, data, or helpful service. There is no obligation. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*



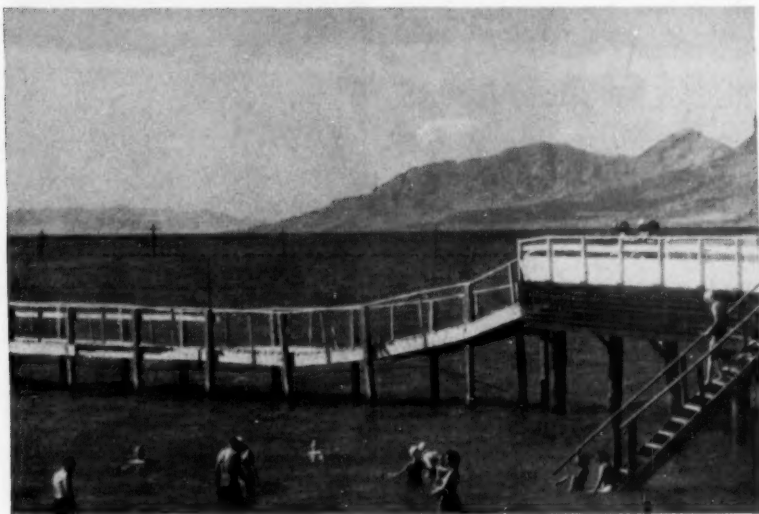
Portion of Brown Co. plant, Berlin, New Hampshire.



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HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine • Calcium Carbonate • Calcium Chloride • Glycols • Synthetic Detergents • Agricultural Insecticides • Soil Conditioners • Other Organic and Inorganic Chemicals

BUSINESS & INDUSTRY.



GREAT SALT LAKE: Yields only 1% of U.S. supply, but antitrusters attack . . .

Mountain State Salt Sales

The little cloud of investigation seemed harmless, even when company books and pricing schedules were subpoenaed several weeks ago; none of the four principal salt companies operating at Great Salt Lake in Utah expected that cloud to unleash the big bolt of antitrust lightning that jolted them late last week.

Industry officials said they couldn't understand why the Justice Dept.'s Antitrust Division would want to expend legal talent (flown in from San Francisco) and time on what they insist is a trifling case. They point out that Utah produces only about 1% of the nation's salt (*CW*, March 12, p. 19), and that there's plenty of salt ready to be worked at Great Salt Lake but only a very limited market for it in the sparsely populated Mountain States.

The government says that the percentage of the total U.S. production involved is immaterial. What's important, the Justice Dept. asserts, is the charge that the four companies—which allegedly supply nearly all the salt for the area—have “conspired to eliminate competition and control prices” in the

sale and distribution of salt in the Rocky Mountain States.

Criminal Suit Likely: Antitrust chief Stanley Barnes says the effect of the alleged conspiracy is that purchasers have to pay “artificial, uniform and noncompetitive” prices. He indicated that the Justice Dept. probably will follow up the indictment by filing a criminal antitrust suit. Attorney General Brownell recently asked for authority to sue for actual losses suffered by the U.S. government because of antitrust violations.

The grand jury investigation into intermountain salt pricing may have stemmed from the fact that several governmental agencies are among the principal users of salt in the area. Other consumers: meat and vegetable packers, water softener companies, feed dealers, and suppliers of brine for refrigerated freight cars.

Besides the pricing documents, the grand jury also subpoenaed officials of the four companies, but those witnesses weren't called on during the probe. In the end, the jury returned indictments against Morton Salt Co., Chicago; and Royal Crystal Salt, Des-

eret Salt, and Deseret Livestock Co., all of Salt Lake City. Stansbury Salt Co. and President Council McDaniel of Deseret Salt are named as co-conspirators but not as defendants.

Conspiracy Denied: To a man, officials of the salt companies concerned are denying any antitrust violation on their companies' part, profess mystification as to what's behind the action.

Speaking for itself and Royal Crystal (identified in the indictment as a wholly owned subsidiary of Morton Salt), the Chicago firm promised that the suit will be “vigorously defended.” “Both companies submitted a considerable number of price scales, documents and other data,” Morton related. “However, none of the witnesses subpoenaed from Morton and Rock Crystal was ever called, so that neither company had an opportunity to describe to the grand jury the manner in which the two companies were conducting their business affairs in the Utah area.”

Vice-President David Robinson of Deseret Livestock said his firm was “at a loss” to understand how the grand jury made a case of conspiracy against his company. “The company furnished our records and files, cooperated in every way with the grand jury. We deny that we are a party to any conspiracy to fix prices and will defend ourselves in court.”

Possible Warning Seen: Although four companies are named as defendants, only two plants are involved. Morton's plant at Saltair is operated for the joint benefit of Morton and Rock Crystal; the plant at Lake Point was owned by Deseret Livestock up to Jan. 1, then transferred to Deseret Salt. Stansbury Salt, the “co-conspirator,” is understood to be producing only 7000 tons/year from Great Salt Lake.

One possible interpretation of the Justice Dept. action: it could be intended as a warning to the salt industry at large—and possibly to other industries—that Washington is ready to look into complaints of allegedly noncompetitive bidding on federal, state and local purchase contracts.



WHITFIELD: Will accept, if confirmed, to serve as . . .

Ninth-Inning Relief

Allen Whitfield, a Des Moines attorney, last week was named by President Eisenhower to be a member of the Atomic Energy Commission. Whitfield, a Republican, will serve out the term (due to expire June 30) of former Commissioner Joseph Campbell, who has been nominated as Comptroller General. His introduction to atomic developments came when he represented Iowa State College at Ames over matters concerned with the Ames laboratory of the AEC.

10-Year Test Triumph

Sturdier support for use of fluorides in drinking water as a public health policy and an indication that ammonium fluoride may be the preferred material for that purpose—these are the first fruits of a series of 10-year field tests on water fluoridation.

Grand Rapids, Mich., served as the site of the first 10-year trial run, and officials of the U.S. Public Health Service this week are triumphantly drafting the final report. Highlight of the test: a two-thirds reduction in the number of cavity-marred teeth among 10-year-old children who have used fluoridated water since birth. By contrast, not more than 40% reduction has been achieved by regularly brushing a fluoride-containing medium onto the teeth, according to Dr. John Knutson, USPHS chief dental officer.

Studies by the agency, Knutson

added, seem to point to ammonium fluorides as being cheaper to use, yet fully as effective as the sodium salts.

Reporting to a Congressional committee, Knutson said USPHS has made a special study of patients with kidney disease, found that they're not affected by use of fluoridated water.

Rough Sledding Ahead

The Administration is about ready to ask Congress to approve the second major item of President Eisenhower's foreign trade program—a new permanent organization to administer the General Agreement on Tariffs and Trade (GATT). Riding on its success: all postwar tariff cuts—including many over which segments of the chemical industry have been exercised.

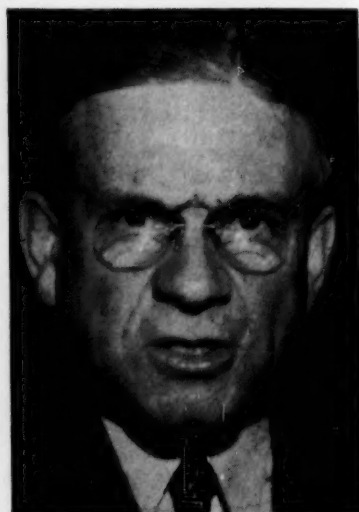
The fierce opposition the Administration's tariff bill is meeting in the Senate indicates just how hard the infighting is apt to become. Indicating what importance Eisenhower attributes to the struggle: Clarence Randall, president of Inland Steel and the President's special advisor on foreign commercial policy, will direct the Administration's GATT campaign.

Pressure Is On: Putting the pressure on Congress to reconsider the whole trade-tariff picture now: 34 nations (which together account for 80% of the world's trade) have just completed negotiating GATT (CW, March 19, p. 15), have drafted a statute for the new permanent organization, which is due for signature by the U.S. this week. Next step: presentation to Congress for approval.

Congress will not be asked to approve the substantive portions of GATT—the complicated set of rules designed to govern members' practice on such things as import quotas, taxation of imports, subsidies, etc.

The President will commit the U.S. to observing these rules by Executive agreement, as in the past, under the authority to make trade agreements granted him in the Trade Agreements Act.

But the decision of Congress on the new trade organization—to be called the Organization for Trade Cooperation—will still decide the fate of the whole trade program in the opinion of most U.S. official trade experts. They are convinced that without an organization to enforce GATT and adherence to tariff concessions, the whole



RANDALL: As campaign manager for GATT, he faces . . .

structure of trade agreements and orderly trade practices built up since the war would disintegrate rapidly into world trade anarchy. The U.S. no longer would be able to insist on the gradual removal of other countries' barriers to our exports and to freer world trade in general.

Protectionists in Congress generally agree that defeat of the organization for trade cooperation probably would hamstring the Administration's entire trade liberalization program. They are saving their biggest guns for the battle over OTC and are counting on the support of constitutional purists who contend that U.S. participation in OTC would be unconstitutional.

The odds are weighted slightly against Congressional approval by most observers at the moment. But this could change. The battle will hinge on the constitutional issue. If the Administration can win this one, there won't be the heavy pressure on Congress from industries fearing tariff cuts that there is on the tariff bill.

GATT and the OTC in themselves don't involve tariff cuts directly. The Administration will argue that—on the contrary—they are designed to protect tariff concessions won for our exports, and that they represent heavy concessions from foreign countries to U.S. trading interests.

"Injured" industries won't be easily persuaded on this score, though, can be counted on to keep up the pressure on senators and representatives to turn down both GATT and OTC.



PETTIBONE: Despite last-minute opposition, he can point to a . . .

Job Accomplished

With a number of do-or-die dissenters hanging on the the last gasp, the climax of the government's attempt to sell its synthetic rubber plants came this week. Deadline under which the issue was hanging: March 25—last date on which the Senate and the House of Representatives could register a veto to either the entire sale or the individual agreements.

When hearings of both the House and Senate concluded last week (March 14-18), it was pretty well agreed that Holman D. Pettibone's rubber-producing facilities Disposal Commission had done a commendable job in recommending a sale package. Hard cores of opposition had developed, however—both in the Senate (where the sale of three California plants to Shell Chemical was under fire) and in the House (where a number of representatives were protesting the entire deal).

These were the last-minute developments:

- Rep. Wright Patman (D., Tex.) and other representatives who have championed small business began a last-minute effort to block over-all sale on the grounds that it would give plants to companies that allegedly have tacit "understandings" that lead to price fixing and monopoly, freezing out small business from the rubber industry.

Patman was up against formidable competition. The strongest proponent of the proposed sale in the House is Rep. Carl Vinson (D., Ga.) who, as chairman of the Armed Services Committee, forced a 27-3 unfavorable report on Patman's resolution that would disapprove the sale: "Let's take up this thing and get rid of it." Vinson and a strong bipartisan majority of the committee felt that the clearance on antitrust grounds of the sale package by Attorney General Brownell will assure competition. Statements by purchasers to the committee as to the amounts of rubber they would keep available for non-integrated business is expected to be another strong argument.

- In the Senate, two arguments were raised over the Shell contract. Legality of the package bid Shell made for Los Angeles styrene, butadiene and copolymer rubber plants was questioned by Minnesota Mining and Edwin Pauley, unsuccessful bidders for California facilities (CW, March 19, p. 15).

- But the argument that will probably decide the issue when the Senate votes caused the greatest stir in the final week of discussions. Nub of the question: whether any of the U.S. synthetic rubber plants should be sold to a corporation with foreign parents. Shell Chemical, through a complex chain of two U.S., one Canadian and one Dutch company, is controlled by

Royal Dutch Petroleum Co., and the "Shell" Transport and Trading Co.

Resolutions that would disapprove the Shell sales were passed by a 3-2 Senate Banking subcommittee vote.

The full Banking Committee, however, reversed its decision—voted 9 to 5 to report the resolutions out to the floor unfavorably.

Whether this split will be duplicated in the final Senate vote is questionable. But observers were sure that it meant a hot fight right up until the veto limit deadline.

Many Argued, Few OK'd

This is the time of year when state legislators—eager to get home for the spring plowing or other personal business—hurriedly weed out the bills piled up in committees. And it's clear this week that out of the many bills with significance for the chemical industry that have been introduced and argued, only a few have much chance of being passed.

Particularly is this the case in Albany, where New York lawmakers have been pondering dozens of measures that would affect chemical process companies. It now appears that only a handful of those proposals will get to the floors of the two houses.

Of particular interest to the industry because of the national implications are three pairs of bills—all pending in committee—relating to practice of engineering by corporations. The Milmo-Giaccio bills are favored by companies that design and build chemical plants and other industrial buildings; last year, the legislature rejected a similar bill. The Cook-Brook measures are advocated by the New York State Society of Professional Engineers; they would modify the present law permitting only a few corporations to practice engineering in the state. More extreme are the Mackell-Lama proposals, which would prohibit any such corporate engineering practice in New York.

A bill on air pollution research seems to have a good chance of passage, but even so, nothing will come of it unless the New Jersey legislature takes similar action. This bill would appropriate \$30,000—provided that New Jersey puts up an equal sum—for investigation of sources and extent of air pollution in the New York-Newark area, and resulting damages.

COMPANIES. . . .

Calvert City Chemical Co. (a wholly owned subsidiary of Pennsylvania Salt Manufacturing Co.) has been incorporated for the purpose of developing extensive fluorspar resources in western Kentucky. Construction has already started on milling and flotation facilities.

Also recently incorporated:

- In Dover, Del.: **Crestwood Chemical Co.**, authorized capital stock, \$1000; **A.A.A. Ammonia Service, Inc.**, authorized capital stock, \$100,000; **Ultra Chemical Works, Inc.**, authorized capital stock, \$1000; **Retzloff Chemical Co.**, authorized capital stock, \$75,000.

- In Wilkes-Barre, Pa.: **Master Chemical Products, Inc.**, capital of \$50,000.

- In New Orleans, La.: **Bartlett Chemical Service, Inc.**, capital stock, \$100,000.

More year-end earnings:

- **Diamond Alkali Co.**: sales 1954, \$93.5 million—up 7.8% over 1953's \$86.7 million; net earnings 1954, \$5.5 million—down 6.9% from 1953's \$5.9 million.

- **Michigan Chemical Corp.**: sales 1954, \$5.8 million—up 2.1% over 1953's \$5.7 million; net earnings 1954, \$228,000—up 62.9% over 1953's \$140,000.

- **Minnesota Mining & Manufacturing Co.**: sales 1954, \$230 million—up 5% over 1953's \$219 million; net earnings 1954, \$24.6 million—up 37.9% over 1953's \$17.9 million.

- **Heyden Chemical Corp.**: sales 1954, \$17.4 million (including two months' sales of Nuodex Products Co., Inc.)—down 25.9% from 1953's \$23.4 million (which included sales from the company's former antibiotic division, sold Dec. 1, '53); net earnings 1954, \$697,000—down 43.9% from 1953's \$1.2 million.

- **Abbott Laboratories**: sales 1954, \$88.1 million—no percentage difference from 1953; net earnings 1954, \$8.7 million—down 5.6% from 1953's \$9.2 million.

- **Pittsburgh Plate Glass Co.**: sales 1954, \$431 million—down 4.9% from 1953's \$451 million; net earnings 1954, \$38.6 million—up 5% over 1953's \$36.8 million.

- **Filtrol Corp.**: sales 1954, \$20.5

million—up 14.1% over 1953's \$17.9 million; net earnings 1954, \$3.5 million—up 80% over 1953's \$1.9 million.

- **Eli Lilly and Co.**: sales 1954, \$122.2 million—down 2.4% from 1953's \$125.2 million; net earnings 1954, \$11.3 million—down 9.7% from 1953's \$12.4 million.

- **Celanese Corp. of America**: sales 1954, \$147.6 million—down 11.1% from 1953's \$166.0 million; net earnings 1954, \$6.6 million—down 38.3% from 1953's \$10.7 million.

EXPANSION. . . .

Tall Oil: **Union Bag & Paper Corp.** will build a tall oil distillation plant adjacent to current facilities at Savannah, Ga., with a processing capacity of 15,000 tons of crude oil annually. The plant will separate crude tall oil into resin and fatty acids, and when completed will establish Union Bag as the only commercial operation in the U.S. pro-

ducing crude and refined tall oil, distilled tall oil, and tall oil resin and fatty acids.

Construction starts immediately, completion is expected early in 1956.

• **Polyethylene Resin:** **National Petrochemical Corp.**'s new polyethylene resin plant at Tuscola, Ill., is now on-stream. Capacity: 26 million lbs./year.

• **Caustic, Chlorine:** **Canadian Industries (1954) Ltd.** will start construction April 1 of new units to raise output by 300% at its Cornwall, Ont., plant.

• **Aluminum:** **Aluminium, Ltd.** will start work on a \$190-million expansion program to bring production at its Kitimat (British Columbia) aluminum smelter up to 330,000 tons/year. Present capacity: 91,500; additional capacity, already under construction: 60,000 tons. Estimated date of completion: 1959.



Blood Donations—by the Barrel

OVERSUBSCRIBED in the Red Cross blood donors' program are the employees of Allied Chemical's Solvay Process Division plant at Syracuse, N.Y. Since 1950, these people—most of whom are members of Local 12457, District 50, United Mine Workers—have con-

tributed a total, of more than 8 bbls. of blood, and the drive is continuing this year. Looking on as Red Cross worker Aarne Oksa refrigerates latest donations are Local 12457 President Thomas Young (left) and Assistant Plant Manager M. James Campbell.

a chemical plant site

with coal, gas, limestone, water sources "on the scene"

Situated at the gateway to the South in the southwestern part of Virginia, an industrial site of 2,100 acres with the basic raw materials of the chemical industry at hand.

coal

There are coal reserves in excess of 100,000,000 tons immediately adjacent to this site. This coal is of high volatile rank, low in sulphur and ash—an excellent steam and coking coal, which can be mined at an exceptionally low cost.

gas

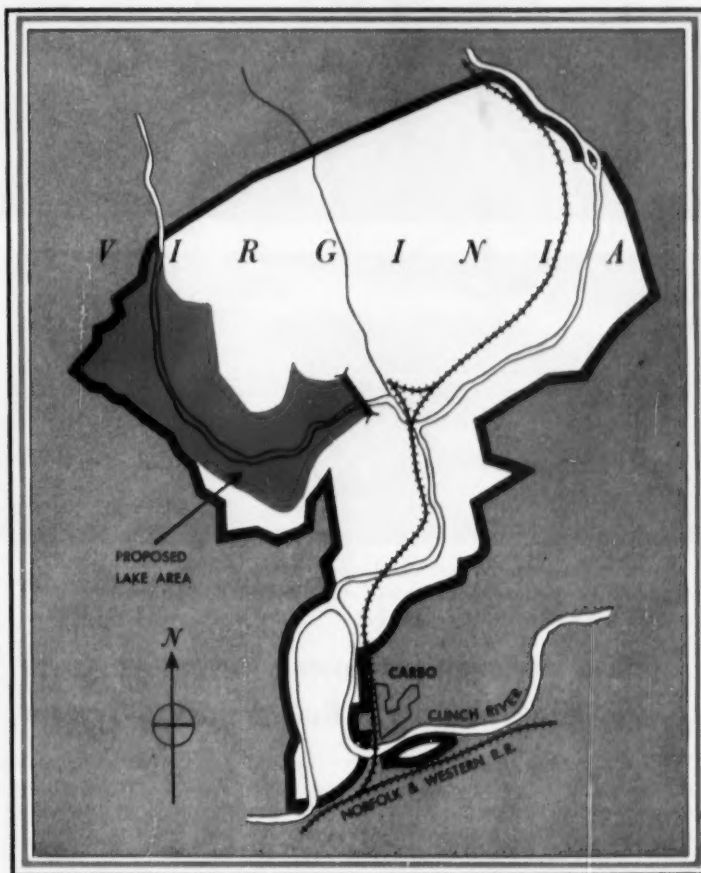
Natural gas reserves of over 35,000,000,000 cubic feet have been proven to date on Clinchfield's 400,000 acres of gas properties. Through its continuous drilling program these reserves are increasing yearly.

limestone

Ample supplies of limestone are locally available from sources controlled by Clinchfield.

water

Included on the site is a projected reservoir with a water storage capacity of 11,875 acre feet. In addition the Clinch River parallels the southern boundary of the site.



labor

Within a 10 mile radius there are seven towns with ample supply of native labor. Our own application files carry over 10,000 names.

transportation

This site is served by the Clinchfield Railroad and the Norfolk & Western Railway giving access to all markets, north, east, south and west.

For further information, write to H. W. Livingston, Vice President
CLINCHFIELD COAL CORPORATION

A Subsidiary of The Pittston Company
DANTE, VIRGINIA

for you
inform

brief summaries
helpful product



From six strategic locations across the country, Monsanto speeds bulk shipments of quality-controlled plasticizers.

How Management Lowers Inventory Costs By Using Monsanto Bulk Shipping System

With rising costs cutting down the return on the profit dollar, progressive management is turning to improved material handling to reduce its processing and production costs.

One method of accomplishing this in the plasticizer field is to lower inventory costs by taking advantage of Monsanto's network of bulk shipping stations located from coast to coast.

Using these stations gives you several advantages. You reduce the capital investment required to construct large storage facilities. You have less of your money tied up in costly inventory and you gain greater flexibility in scheduling of materials and work.

At present, a wide variety of Monsanto plasticizers is available from bulk stations located at: Everett, Mass., Perth Amboy, N. J., Greensboro, N. C., Akron, Ohio, St. Louis, Mo., and Los Angeles, Calif.

Typical of the broad range of Monsanto plasticizers ready for immediate shipment from bulk stations are DOP and Santicizer* 160. DOP (dioctyl phthalate) is compatible with a wide range of natural and synthetic resins; it is of particular usefulness in vinyl chloride, vinyl chloride-acetate copolymers, synthetic rubbers, cellulose nitrate and ethyl cellulose formulations. Monsanto DOP features good heat and light stability, low vapor pressure and excellent resistance to hydrolysis. In plastic compositions, it imparts permanency, low-temperature flexibility and excellent electrical properties.

Santicizer 160 offers rapid fusion, increased tensile elongation and tear properties, as well as stain and extraction resistance. S-160 is an outstanding performer for vinyl floor tile, vinyl-coated fabrics and highly loaded extrusions and calendered film.

For more information, use coupon.

Defoamer PC-1244— New Defoaming Agent

Monsanto's new defoaming agent, Defoamer PC-1244, is particularly effective in systems where the continuous phase is organic in nature or in single-phase organic systems. The effective concentration varies from 5 to 5000 parts per million, depending on the system (average use concentration 250 ppm).

PC-1244 is soluble in many common solvents, shows excellent lasting qualities in systems with a pH below 7. It must be well mixed or dispersed for maximum efficiency.

APPROXIMATE PROPERTIES OF DEFOAMER PC-1244

Appearance of 100% materials: Straw-colored to yellow, viscous semisolid.

Soluble in: Benzene, toluene, kerosene, petroleum, ether, carbon tetrachloride, isopropanol, tertiary amyl alcohol, butyl cellosolve and ethyl acetate.

Insoluble in: Water, methanol, ethanol and methyl cellosolve.

PC-1244 is currently supplied as a 40% solution in kerosene and is available in commercial quantities.

New Booklet Lists Major Uses of Phthalic Anhydride

Monsanto's new booklet about phthalic anhydride provides important information on the major uses of this product in the manufacture of alkyd and polyester resins, phthalate plasticizers, and in the production of dyes, pharmaceuticals and other complex organic compounds. You will also find valuable tips on how to handle phthalic anhydride in either liquid or flake form more efficiently.

Write Monsanto on your company letterhead for a copy of this booklet.

Santolene J Reduces Sedimentation of Base Oils

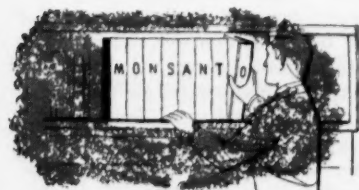
In recent trials conducted by Monsanto, Santolene* J, a new addition agent, used at a concentration of 25 pounds per 1000 barrels of fuel oil, stabilized color and reduced sedimentation of most base fuels.

For example: after 12 weeks' storage at 110° F., oil treated with Santolene J had an NPA color of D-5,

sediment measured 27 milligrams per liter. The untreated oil's color had darkened to D-6 and sediment per liter amounted to 103 milligrams.

Santolene J is not subject to depletion by water extraction, will not form fuel oil-water emulsions which create oil haze or foaming problems, and is not affected by ordinary storage temperatures.

Write to Monsanto for a technical bulletin which describes Santolene J and contains results of stability, sedimentation and rusting tests.



New Technical Bulletin on DDS Available

A technical bulletin has been prepared on dihydroxy diphenyl sulfone (DDS)—a chemical which promises to improve production of heat-resistant epoxy and phenolic resins.

Although primarily used as an agent in electroplating baths, DDS may also be useful as an intermediate in organic synthesis, particularly when a phenolic compound stable to the oxidating action of light and air would be valuable.

Several important DDS reactions, keyed to an extensive bibliography, are diagrammed in the bulletin. Write to Monsanto today for your copy.

Reinforced Plastics Fill Industry Need For Rugged Glazing

The recent growth of reinforced plastics in the consumer field has tended to obscure an equally important advance in the field of industrial applications.

Management of large industrial plants is turning more and more to reinforced plastic panels for side-lights and skylights.

Actual use in these applications shows that reinforced plastic panels have several advantages which make

them outstanding for industrial application.

These panels are extremely strong and virtually shatterproof. They are lightweight, easy to assemble, completely translucent and require a minimum of maintenance. In addition, they are highly resistant to the effects of sun and weather.

Monsanto plays an important role in furnishing the raw materials for the resins which go into these reinforced plastics. It produces maleic and phthalic anhydrides, styrene monomer.

For more information on these products and their potentials in the reinforced plastic field, send in the coupon.

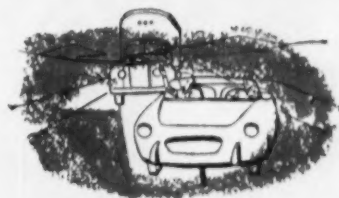


Ortho-Nitrochlorobenzene Chart Now Available

A large wall chart outlining the synthesis of over 120 compounds based on ONCB is now available from Monsanto.

Here on one page is a concise, ready reference showing the important chemical reactions of this versatile intermediate. Mail the coupon to get your copy.

New Multipurpose Additive Increases Lubricant Efficiency



A true multipurpose additive which sets a new standard of gear lubricant performance has just been developed by Monsanto.

Called Santopoid* 44, the new additive combines in one product the best performance characteristics of several separate additives which are effective only in limited applications.

Lubricants compounded with Santopoid 44 provide complete passenger car hypoid protection under the most severe road test and laboratory conditions... not only in the SAE 90 grade but in the SAE 80 grade as well.

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PHILADELPHIA ORATORS: On both coasts, debaters find chemical industry is . . .

Key Factor in Tariff Strife

This year's tariff decisions are being made by the President and Congress; but subsequent verdicts will come from today's youngsters destined to be tomorrow's statesmen and civic leaders.

Not neglecting either the present or future generation of policy makers, SOCMA carries its tariff arguments to hundreds of high school debaters as well as to Washington officials.

It's never happened before, but this year, chemical industry economics has a place in that gossamer world of spring proms, baseball practice and yearbook pictures that high school students live in at this season.

It's happening now because high school debaters have found they can't overlook this industry's problems in discussing this year's national high school debate topic: "Resolved, that the federal government should initiate a policy of free trade among nations friendly to the U.S."

This year's debate season is rolling toward its climax, with state and regional tournaments being held now and the national finals scheduled for June 21-24 at San Jose, Calif., State College. That meet will be conducted by the National Forensic League, whose president is Sen. Karl Mundt (R., S.D.) and which has local chapters at some 600 high schools in about 40 states.

Thirst for Knowledge: Capitalizing on the current debate topic is the Synthetic Organic Chemical Manufacturers Assn., the industry's principal voice on trade and tariff affairs.

SOCMA figures that the scholastic debaters' thirst for data fits right in with the organization's program to "sell" its "selective security tariffs" program not only to Washington but also to the general public.

For one thing, the debaters them-

B & I

selves—many of whom are aiming at careers as lawmakers and administrators—are becoming familiar with the domestic chemical industry's situation *vis à vis* that of foreign producers. Next, those facts tend to "rub off" on the debaters' friends and families. Finally, the information is presented—as forcefully as possible—to audiences and panels of judges (often including newspaper editors, radio and television commentators, and government officials).

So far, SOCMA-prepared information on chemical trade, chemicals in defense, and the industry's vulnerability to low-cost foreign competition has been put into use at nearly 900 high schools across the country. SOCMA's basic stand on the issue—"Trade, Strength and Security"—is named in the reading list in the Debate Manual prepared for high school debaters by a committee of the National University Extension Assn. Other SOCMA publications frequently requested by debaters and their coaches: "Allies in Defense" (a 28-page booklet) and "Middle Road Urged in Developing Sound Tariff Law Policy" (a reprint of an article by SOCMA ex-President Cary Wagner).

Protection Easy to Debate: A CW poll of some of the youthful debaters on both coasts indicates that the material from SOCMA is being put to heavy use; also, that there seems to be a need for this kind of material, in that most of the youngsters—up to

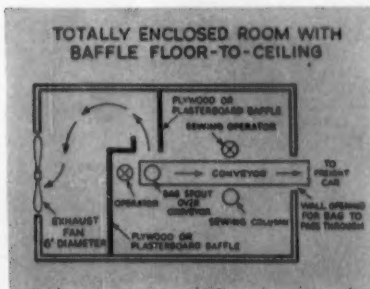


SAN JOSE, CALIF., DISCOURSERS: In first five tournaments, a 77% record.

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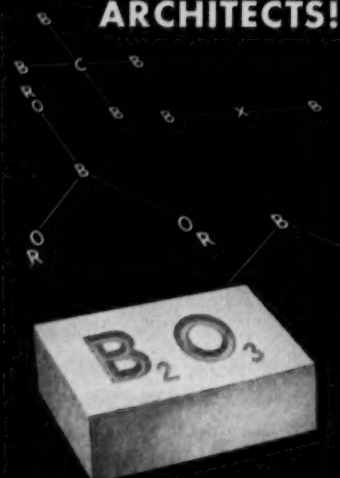
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SAN FRANCISCO CONTEST: In regional meet, serious speaker makes point.

now, at least—have been inclined to favor "free trade" personally.

However, there's a feeling that the "protective tariff" side is easier to debate. Here's how this was explained by a member of Coach Carlo Weber's team at Bellarmine College Preparatory School, San Jose, Calif.:

"First of all, you have the exceptions of those industries vital to national defense. Even when you're debating free trade, you have to admit that some industries would have to be protected. That gives an advantage to protection right off. And elimination of tariffs would have certain short-

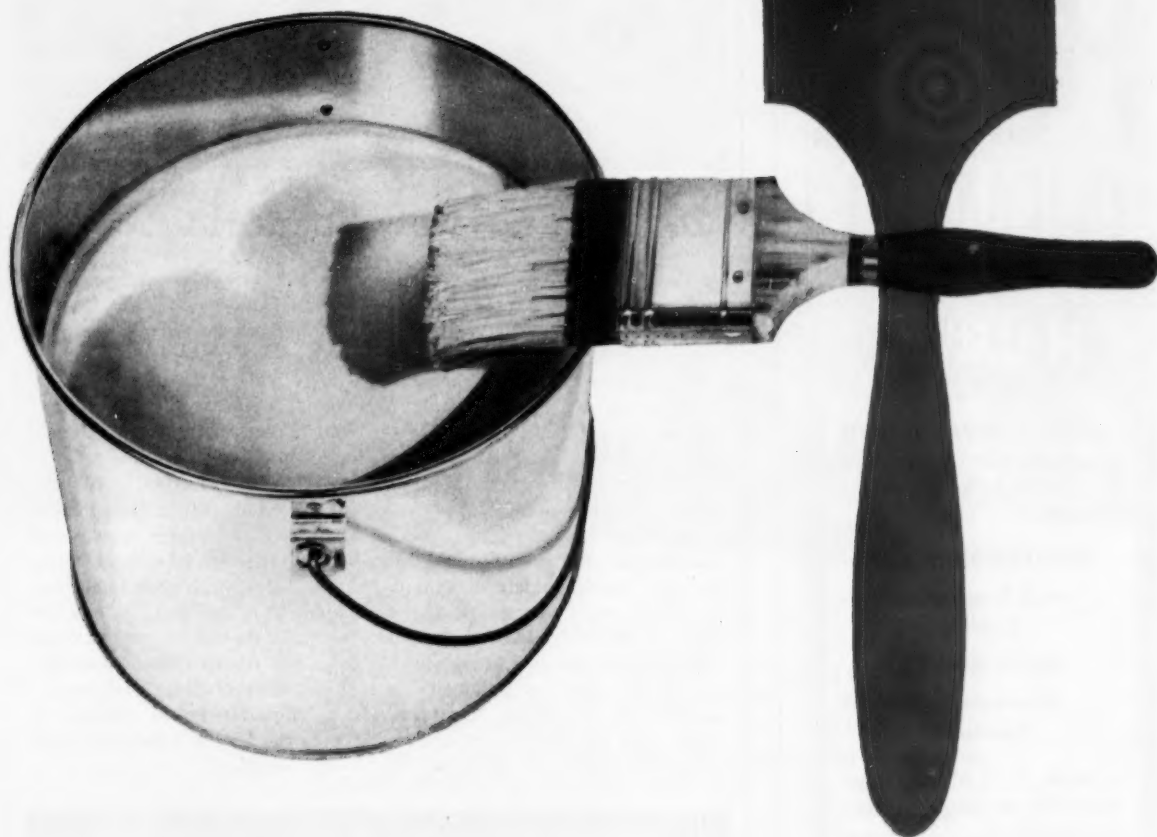
term effects that are easier to visualize and explain than are the long-term benefits of free trade."

There'll be an entirely different debate subject next year, but SOCMA's information committee hopes to work out a plan for continued distribution of information to schools and colleges as study and reference material. The feeling is that much of the pressure on Congress for free trade comes from people who are being moved by emotion rather than by reason; that one way to reduce that pressure is to make pertinent information available to all who are interested.



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Old Setting, New Scenario

ON A BURNING HOT PLAIN outside Murka, Kenya, new processing facilities are today turning out increasing quantities of kyanite and titanium. Source of the mineral-bearing rock is Murka Hill, on whose slopes buffalo and wild elephant still stray.

The infant industry got its start shortly after the end of World War II when travelers along the Voi-to-Tanganyika road and rail route discovered huge boulders of kyanite rock lying readily accessible at the foot of the hill where they had rolled, centuries ago. Kyanite (from which sillimanite is obtained) is needed by European and U.S. spark plug insulator manufacturers as a heat-resistant material, is

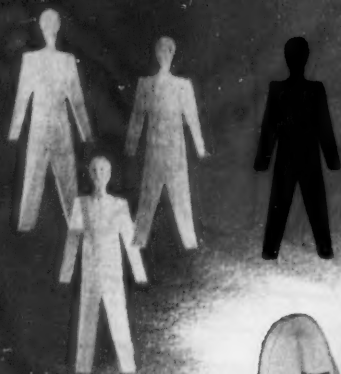
also used in linings for glass melting tanks and electric furnaces.

At first, the government-operated company simply strip-mined the kyanite lying at the foot of the hill; when this pure supply ran out, they were forced to put in more elaborate processing facilities.

Result: a £400,000 plant that today not only extracts kyanite, but also turns out sizable amounts of titanium. African labor hacks away at the hard bluish rock found embedded in the hill in pockets (*above*), shovels it on conveyor belts for transportation downhill. There, after crushing and separation, chips are baked (*below*) in one of the hottest kilns of its type in the world.



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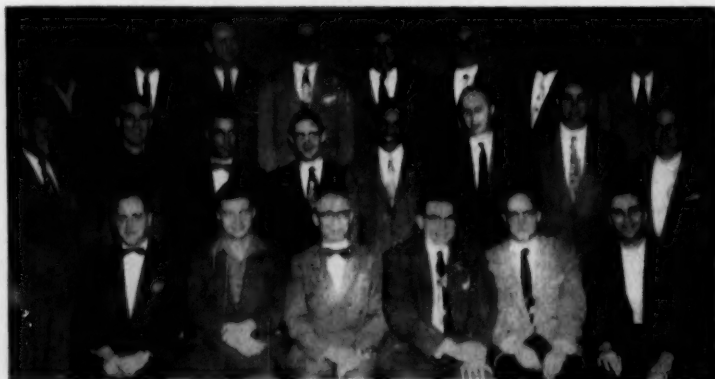
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All Set for Business

AS SOON as merger terms were agreed on and officers elected, the Oil, Chemical & Atomic Workers International Union (CIO) wasted no time in getting set to do business at their new stand. Actually, as the map shows, there'll be 16 new stands—15 districts in the U.S., one for Canada. Officers were elected by all the delegates; ex-

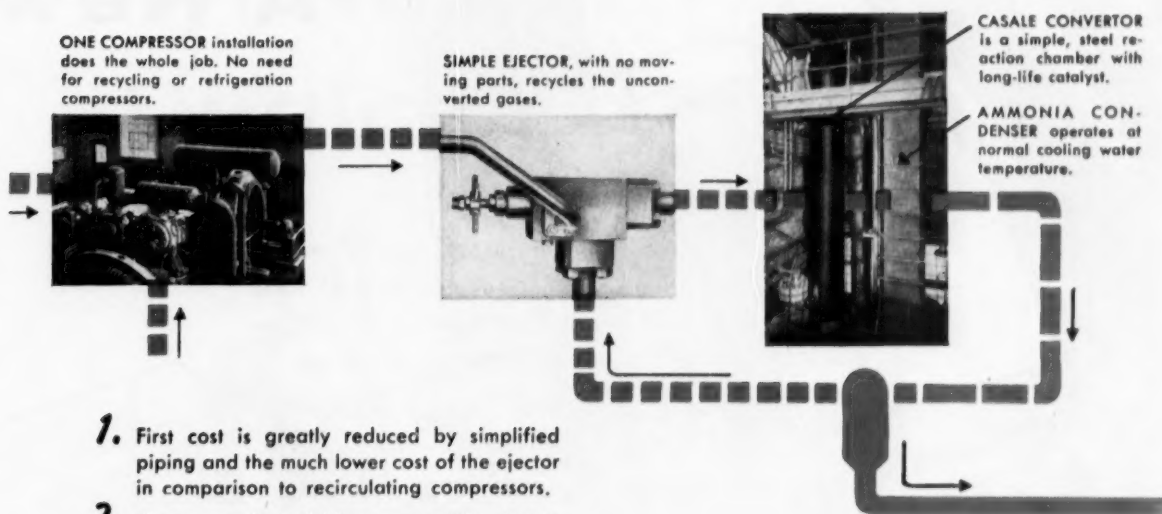
ecutive board members were elected by delegates from their respective districts; and district directors were appointed by President O. A. Knight. Headquarters will be in the former Oil Workers' building at Denver, with Secretary-Treasurer T. M. McCormick as No. 2 man and Vice-President Elwood Swisher as Knight's administrative



HOWARD STUDIOS, CLEVELAND

assistant. Vice-Presidents B. J. Schafer and Joseph Applebaum will each supervise half of the district staffs, and Vice-President Jack Curran will set up shop in Washington as legislative representative. The executive board—which has power to suspend officers and fill vacancies—is made up entirely of rank-and-file members, seven from chemical plants and nine from oil companies. Picture at left shows officers (front row) and executive board members.

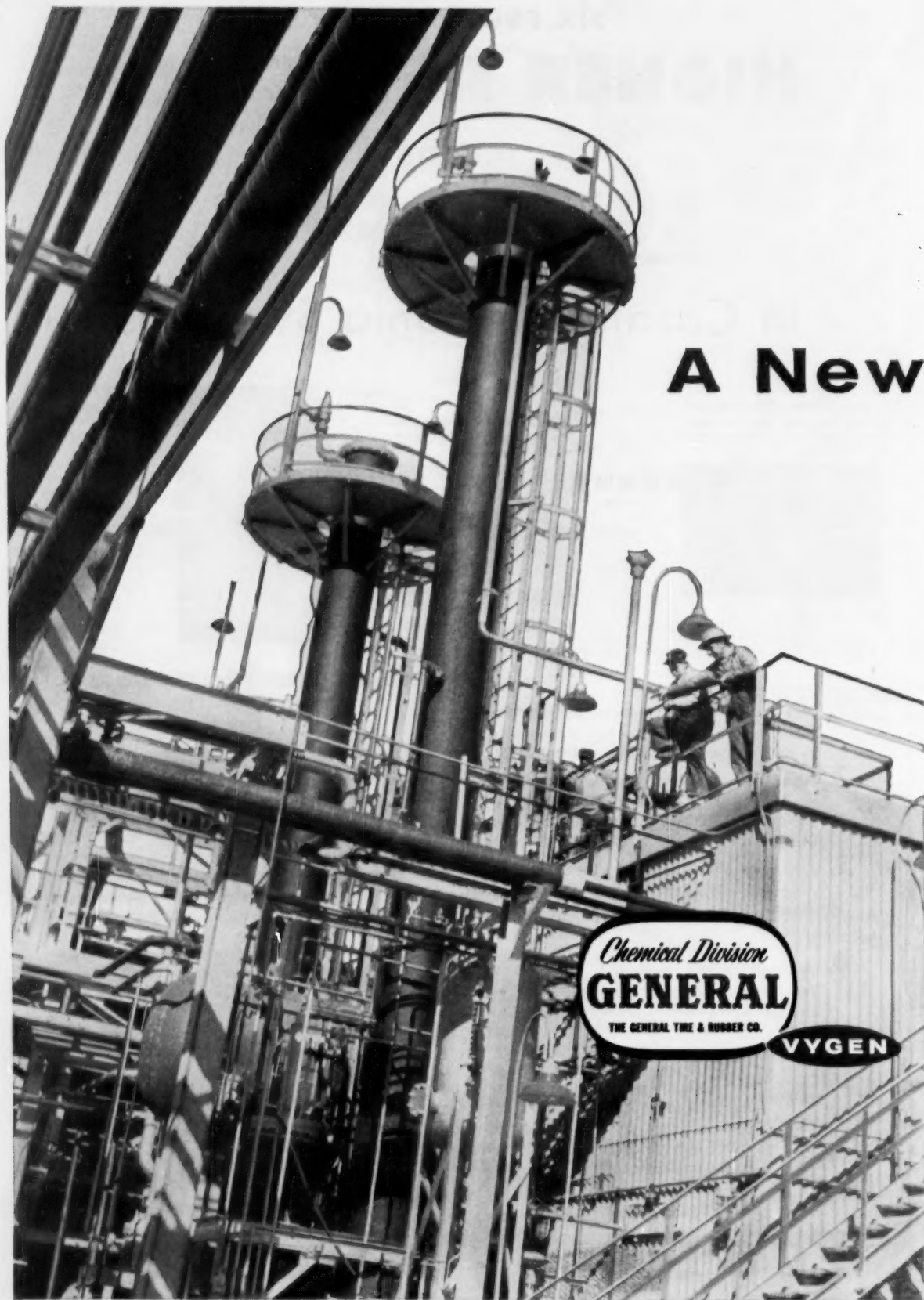
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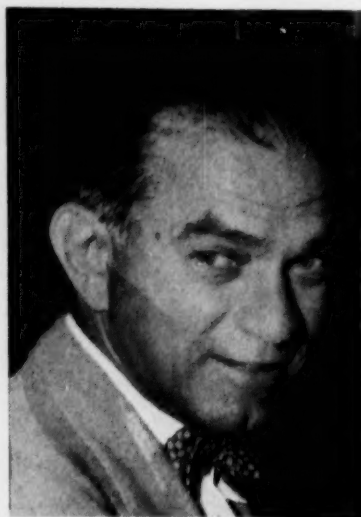
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FULBRIGHT: Is his stock market investigation putting the . . .

Skids Under Prices?

Attention of chemical executives riveted on the Senate Banking & Currency Committee investigation into stock market prices last week. Why, after seven days of steady declines, chemical stocks had dropped to a five-year low; and Senator Fulbright (D., Ark.) was accused of barbed sniping at prominent chemical industry representatives.

Reaction was strong and immediate. Chemical spokesmen from San Francisco to New York deplored, what they termed, the senator's "lack of good taste" in turning what had started out as restrained hearings into a "political free-for-all."

The remark that started the controversy was Fulbright's comment on suggested changes in the capital gains tax. Admitting he had noted the recent rise in stock prices, he added, "The more I think about these people who we've forced to hold on to their stock by this tax, the more my heart bleeds for them . . . Think of the Du Ponts being compelled to sit there holding all that General Motors stock."

Not the Issue at All: What bothered some men in the industry most was that Fulbright's sarcasm (interpreted by some as "good Arkansas politics") ignored the main issue involved, and in hitting at the "industrial giants," he was overlooking the pronounced purpose of the investigation: to look into the effect "a bad tax" was having on the country's wel-

fare . . . and on the millions of John Smiths who invest savings in the stock market.

"When chemical stocks went up," one East Coast spokesman points out, "individual investors didn't really gain anything anyway; it merely offset the effect of inflation on savings."

Effect on Public Confidence: The effect the Fulbright hearings were having on public confidence was disturbing other members of the chemical industry. "After Keith Funston's statement that the market is sound, has been functioning in an orderly fashion, and reflects the public's appraisal of present business conditions and prospects, we'd hoped the market would hold," admits one Midwest vice-president. "Many of us had anticipated some break . . . due to the fact that a number of investors are new . . . but we anticipated nothing of the magnitude of what has occurred."

"Now we may be forced to resell the values of common stock to the public," says another. "A certain amount of this investigation is healthy; but if it is carried too far . . . it may force numbers of companies to retrench expansion plans."

There's little, if anything, individual companies can do about the situation. About that there's little question. But there's no question that their collective temperatures are rising.

Two Near Completion

Two new sulfuric acid plants were nearing completion on the outskirts of Mexico City this week. Both are being built and equipped by Chemiebau, of Nieder-Marsburg, Westphalia, Germany; both will use the contact acid process.

One plant is being built for Alkamex, S.A. (an aluminum sulfate producer), will have a daily capacity of 20 tons of 98% acid. Estimated production date: April 1.

The other, built for Magnesio, S.A. (a magnesium sulfate producer), will boast a capacity of 30 tons/day, is due onstream the last week of May.

Fruitful Visit: Chemiebau's contracts to build the two plants were signed as a direct result of a visit to Mexico last year by Dr. Hans Schutt—a company director. Also built by Chemiebau in South America: plants in Argentina and the Dominican Re-

public, and a lithium plant (still under construction) in Sao Paulo, Brazil, for Orquima, S.A.

In the case of the Mexican plants, domestic sulfur is used; elsewhere the plants are dependent in part on imported raw materials.

The pattern of negotiations follows West German strategy in other sectors of the world. Says director Schutt: "Chemiebau has already built plants in most parts of the world (excluding the U.S.), will continue to try to fan out its interests."

Chase for Tax Dollar

Two chemical process companies have gone to court in an attempt to retrieve some allegedly overpaid tax money from the federal government. Both suits were filed last fortnight in U.S. District Court, New York.

In the larger suit, Sterling Drug is asking judgment for \$13,200 plus seven years' interest "for recovery of amounts erroneously paid and illegally assessed and collected." Sterling relates that early in 1948, it agreed to borrow \$12 million from the New York Life Insurance Co. on a 3% promissory note due Feb. 1, 1963. Later in 1948, Sterling purchased \$13,200 worth of internal revenue stamps, which were affixed to the promissory note and canceled on June 29 that year.

Four years later, Sterling was advised that the note was not subject to taxation. The company applied for a refund, arguing that the note was not a bond, debenture, or certificate of indebtedness; that it was not registered, had no interest coupons attached, and was not a corporate security. But early in March '53, the Treasury's director of internal revenue at New York tersely disallowed the claim.

The other suit involves a claim by Heyden Chemical Corp. for \$3281 plus interest and court costs "on an overpayment of excess profits taxes." Heyden asserts that in crediting its 1942 and 1944 excess profits tax overpayments (\$76,400 and \$79,460, respectively) to the company's 1951 tax bill and in crediting a \$59,503 overpayment in 1945 against Heyden's 1953 tax bill, the Internal Revenue Service should have allowed each of those overpayments to draw about 2½ months' more interest.

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Chemical Expansion Downtrend Halting

(in millions of dollars)

| | 2nd Quarter 1955 | 2nd Quarter 1954 | 1955 | 1954 |
|---------------------------------|---------------------|---------------------|--------|--------|
| All manufacturing | 2,663 | 2,859 | 10,704 | 11,038 |
| Petroleum and coal products | 719 | 696 | 2,765 | 2,684 |
| Paper and allied products | 120 | 117 | 451 | 455 |
| Rubber products | 33 | 35 | 139 | 131 |
| Chemical and allied products | 271 | 292 | 1,110 | 1,130 |

Plant Outlay Turns Up?

Nub of SEC's report: petroleum and coal products expenditures up; rubber products spending up; chemical plant expenditures off a shade.

Businessmen themselves expect new plant and equipment outlay this year to total \$27 billion, slightly above expenditures in 1954. So says the Dept. of Commerce and the Securities & Exchange Commission in an annual survey of the plans for plant and equipment expenditures.

For all chemical process industries, the prediction is slightly more modest. Little change in capital investment is expected—compared with 1954—but what trend there is, is slightly upward again. (Total outlay: \$4465 million in 1955, \$4400 million in 1954.)

Chemicals and allied products are off a shade compared with a year ago. As plans of the industry now stand, investment in plant and equipment will be about \$1110 million for 1955, compared with \$1130 million last year.

Paper and allied products' spending will also be down somewhat in 1955 from 1954, if present plans are carried out. The industry now figures to spend \$451 million this year, compared with \$455 million last year.

But petroleum and coal products should show an increase—\$2765 million in 1955 compared with \$2684 million in 1954.

Rubber products are up, too—\$139 million this year, compared with \$131 million last year.

All manufacturers' outlays reflect a

4% reduction in the programs of durable-goods producers, a 2% decrease in nondurable-goods industries from 1954 to 1955.

In durable goods, a number of industries that reduced their expenditures in 1954 (iron and steel, nonferrous metals) are now planning increases.

The 4% rise planned by public utilities is attributable entirely to a sharp increase now planned by gas companies, will be used in large part for new pipeline construction.

Finally: manufacturers this year say they expect a 4% rise in sales. Durable-goods producers as a whole expect a 5% advance; nondurable-goods producers foresee a gain of 4%.

Good Batting Average: This same survey last year of business anticipations correctly predicted the trend of capital outlays from 1953 to 1954—missed the precise percentage change only slightly. For example:

Manufacturers' total expenditures fell 5% in 1954; SEC had predicted they would drop only 4%.

Manufacturers' sales also declined last year, as had been projected in the survey, with the drop amounting to 5% compared with an anticipated decline of 3%.

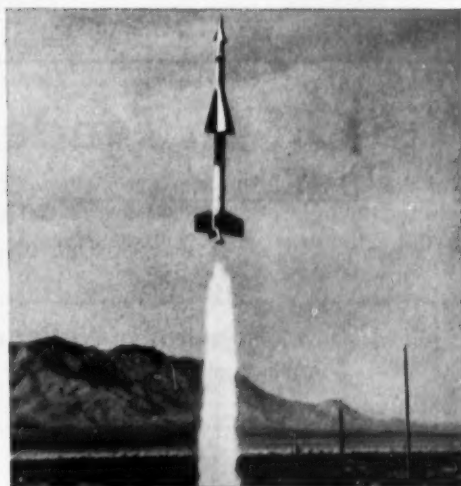
In all, a creditable estimate.



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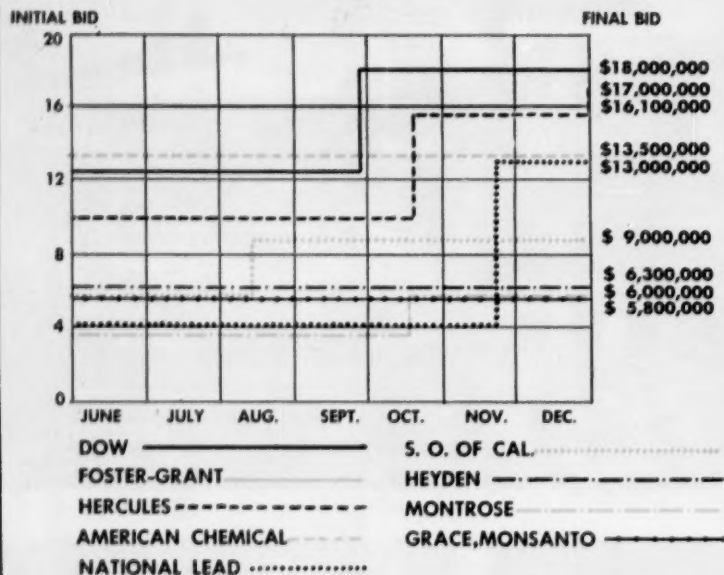
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Bids on Los Angeles styrene plant—1954

(millions of dollars)

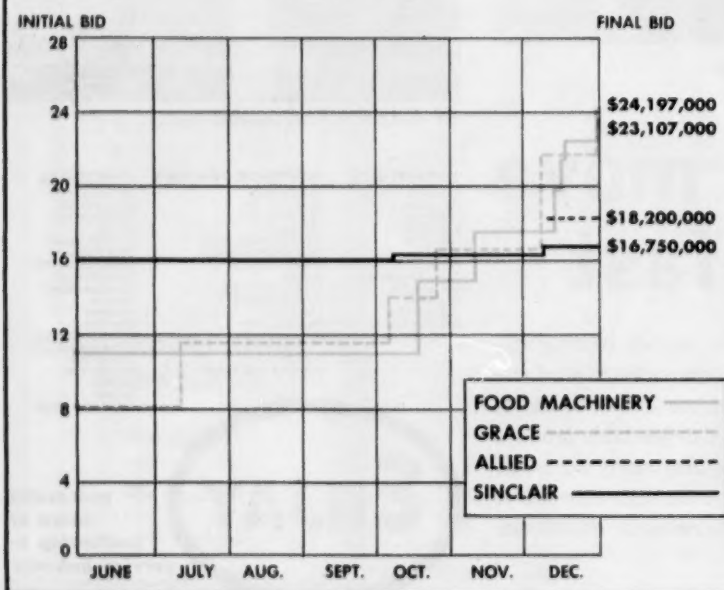


Tip-Off on Tenders

Behind-the-scene reports point up Rubber Commission's maneuvering in recent sales negotiations—nimble footwork to avoid difficulties, new indexes of value.

Bids on Houston butadiene plant—1954

(millions of dollars)



Chemical executives now have some good figures on which to base their estimates of how badly their competitors needed the butadiene, styrene and synthetic rubber plants the government had up for sale.

This contrasts with the situation that has existed in past months, when the Rubber Producing Facilities Disposal Commission was almost as silent in its report as it had been during the seven months in which it negotiated the sales. The only details it revealed in its report (CW, Jan. 29, p. 14): original proposals received and final prices negotiated with successful bidders.

But now, some details of the week-by-week negotiations have been revealed during the last fortnight's Congressional hearing (CW, March 19, p. 15), both in oral testimony and in charts.

Highlights:

- W. R. Grace & Co. was so anxious to buy the Houston butadiene plant that it raised its offer five times within the final four weeks of negotiation—an average of over \$1.3 million per raise.

- Indeed, competition between Grace and Food Machinery was so heated that the commission was forced to ask for final sealed bids from each party. Six days before the final deadline, bids were opened in the presence of representatives of both companies. Food Machinery was high; it then signed a contract with government authorities.

- The commission persuaded Standard Oil of California to raise its bid on the Los Angeles GR-S plant 42% above the amount the commission's engineers considered a minimum acceptable price.

- The commission was relieved that the bids by Monsanto and Dow for the Los Angeles styrene plant were not the highest that it negotiated; it was afraid that the Attorney General would turn down such sales, since sale to either would have given the companies jointly 75% of the U.S. styrene capacity. The commission, as the negotiations wound up, even refused to tell Dow just how much below target price (\$20.3 million) its bid was—although it gave such information to other bidders.

- The original bid by Goodrich-Gulf Chemicals on the Port Neches, Tex., GR-S plant was used by the commission as a benchmark; unlike most other offers, Goodrich-Gulf's bid was

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IN CANADA: Standard Chemical Limited and its Commercial
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as much as the figure the commission's engineers considered an appropriate upon which to judge other offers.

Key Point: This last point is the tip-off to how the commission handled its rubber negotiations as a whole. It ignored the traditional indexes by which government property has heretofore been sold—gross cost, book value, depreciated value. Instead, its engineers—Sanderson & Porter—made estimates of each plant's potential earning power, taking into account such factors as raw material costs, labor rates, need for new service facilities (such as steam plants), federal, state and local taxes, and transportation rates for raw materials and finished products.

But the commission was frankly worried over the soundness of its approach. Thus, when the bids came in, and Goodrich-Gulf's was almost identical to the engineering estimates, the commission could go ahead. Where other companies were called in for negotiations, the commission asked Goodrich-Gulf merely to talk over the steps it took in determining its bid.

How It Worked: The amount the commission considered acceptable for the highly desirable Los Angeles styrene plant was just over \$20 million. None of the bidders for it (*see top chart, p. 36*) even approached this figure. Shell Chemical had offered \$27 million for the three plants, but raised its bid to \$30 million in late October—nearly meeting the commission's target of \$30.8 million (divided in a ratio of 20.3 for styrene, 7 for butadiene and 3.5 for copolymer). The highest other combination of bids for these three plants was \$28 million—but the \$5-million bid by California Standard Oil for the GR-S plant included a codicil that the large rubber companies (which themselves were buying Gulf Coast plants) purchase rubber for their West Coast fabricating plants from California Standard. Shell's proposal was the only bid that did not contain any such condition.

The single plant that saw the most heated bidding was the Houston butadiene facility (*see lower chart, p. 36*). One of the special reasons for the desirability of such a plant: the potential nonrubber uses for butadiene (two prime examples of uses include nylon intermediates—adipic acid and sebacic acid).

But the obviously favorable impres-

sion that the charts, figures and testimony from Disposal Commission members made on members of Congressional committees had some industry observers puzzled. Aside from the vital interest of such material to competitors, they were wondering why it had been omitted from the commission's report. Had it been included originally, they reason, there would have been much less argument in Congress over whether the program should be approved.

Now, brought up as an afterthought, in an attempt to buttress the commission's position on sale, it effectually blocks a number of arguments. Why it wasn't offered earlier is a mystery.

Storm Brewing in Texas

Resentment was building up in Texas last week over the Treasury Dept.'s failure to meet its report deadline (March 15) on need for the government-owned tin smelter in Houston. Under a one-year extension grant, plant operations will be forced to close down on June 30; Texas industrialists fear that if the report is delayed much longer, there won't be time to verify its findings with an on-the-spot investigation.

"The Administration seems determined to close the plant . . . regardless of what its report shows," charges Rep. Clark Thompson. Should his predictions be realized and the government dispose of the tin smelter, Thompson says that he will "insist that the Treasury Dept. put the facilities up for public sale."

Realignment Official

Six members of Merritt-Chapman & Scott Corp.'s board of directors were among eight new members elected to the board of Tennessee Products & Chemical Corp. last week following acquisition by Merritt-Chapman of more than a 90% interest in the company (*CW, March 19, p. 28*).

All officers of the Nashville concern will continue in their present posts. Merritt-Chapman has extended (until March 28) its exchange offer to the other 10% of common stock holders.

Now also in the Merritt-Chapman fold: 80% of the stockholders of New York Shipbuilding Corp., 90% of the common Class B share holders of Devoe and Reynolds, and 75% of D&R's common Class B holders.



CIO'S RIFFE: For new Oil-Chemical-Atomic union, full support on organizing.

LABOR

Organizing Aid Promised: The CIO continues to stress its aim to sign up more members at chemical plants this year. CIO's Executive Vice-President John Riffe—who doubles as director of organization—has stated that he and his staff "look forward to giving every assistance to the new Oil, Chemical & Atomic Workers International Union in organizing the unorganized in the chemical industry."

Another hint of CIO plans: members of the new Oil-Chemical-Atomic union are being asked to ponder the idea of a 28-hour work week. It's being suggested that this might be the answer to automation (fewer man-hours needed per unit of production); and that a company might be better able to offer a guaranteed work program (or guaranteed annual wage plan) with a shorter work week, in that it might be easier to guarantee 52 weeks' work of 28 hours each than 52 work weeks of 40 hours each.

Unions vs Brown: The dispute over President Eisenhower's candidate for wage-hour administrator in the Labor Dept.—Newell Brown—is still unresolved. But a showdown will come when Brown—who was secretary to White House aide Sherman Adams while Adams was governor of New Hampshire—appears before the Senate Labor Committee. So far, the committee hasn't called on Brown to testify; but the AFL and CIO promise



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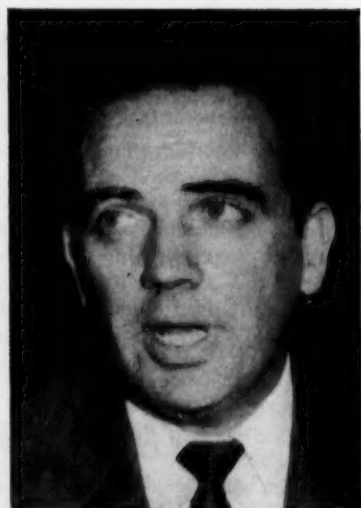
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B & I

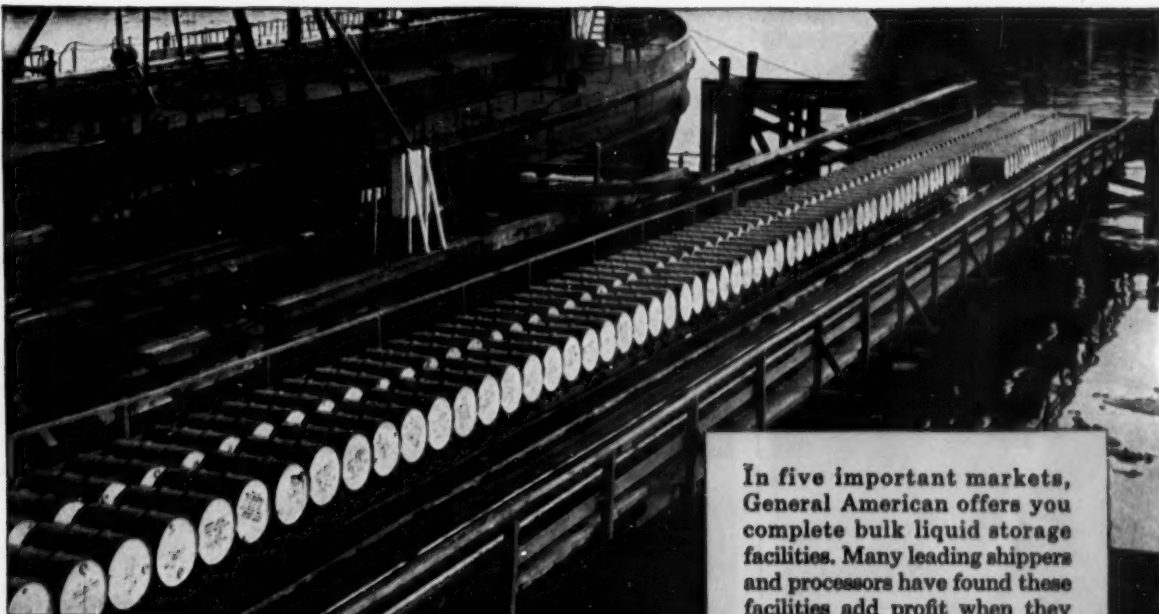
that they'll be on hand to oppose Brown for the important post of minimum wage administrator. They'll base their opposition on Brown's record as New Hampshire employment security director. Labor Secretary William Mitchell and the Administration are standing behind the nomination in the face of the threatened battle. Meanwhile, William McComb—who resigned the wage-hour post—is remaining on the job.

One reason the AFL and CIO are particular about who gets this job: they've launched a drive to have the federal minimum wage raised from the present 75¢/hour (where it's been since early 1950) to \$1.25/hour. Early last week, a delegation of AFL and CIO leaders called on President Eisenhower and urged his support.

Tennessee Standoff: Gov. Frank Clement threw his support behind a bill advocated by organized labor, but it was withdrawn because of "too much opposition" in the Tennessee legislature. The bill backed by Clement was patterned after the federal Norris-LaGuardia Act, and would have provided that no state court could issue an injunction (in a case stemming from a labor dispute) to prevent a strike, to keep a person from joining a union, or to stop payment of unemployment insurance. Also withdrawn: two bills deemed favorable to management, one to regulate union elections and one to limit picketing during strikes.



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BRETSCHNEIDER, SCHOENMAKERS: Work over last details of upcomingACHEMA exhibition in Frankfurt.

FOREIGN.

Chemical Exposition/West Germany: Latest count of exhibitors at theACHEMA Congress to be held in Frankfurt May 14-22 includes 450 companies—from all corners of the world. Known officially asACHEMA XI (and sponsored by the Deutsche Gesellschaft fuer Chemisches Apparatwesen), the event will draw representatives of 23 European technical societies, will feature lectures by 77 scientists, engineers and industrialists from 16 countries (including the U.S.).

Also included in the crowded agenda: 44 plant and laboratory visits to German chemical firms in Frankfurt, Mainz, Darmstadt and Mannheim.

Short Supply/Russia: Russia's deputy minister of consumer goods has accused the U.S.S.R. Ministry of the Chemical Industry with failure to supply Soviet light industry with dyes and chemicals "in the necessary amounts and assortments."

Writing in the official government newspaper *Izvestia*, N. Mirotvortsev charges that "dyes and preparations made by plants of the aniline industry don't insure durability and brilliance in fabrics." Production of light-blues and reds is particularly needed to satisfy growing consumer demand.

Petrochemicals/West Germany: Deut-

sche Erdoel A.G. (Heide), plans to enter the petrochemical field and produce plastics in West Germany. New shares of common stock (worth DM 35 million) will be offered to finance the project.

Polystyrene/India: The U.S. is expected to contribute 25% of the capital for a proposed polystyrene plant in India. Preliminary details have already been thrashed out between the Plastics Manufacturers Assn. in Bombay (in cooperation with North Indian industrialists) and U.S. representatives of Dow Chemical. Estimated cost: \$1.25 million.

At present, India imports about \$3.5 million worth of polystyrene and PVC molding powder annually.

Ammonium Sulfate/Japan: Japan's ammonium sulfate production will be stepped up to 3.32 million tons by 1957 from 2.8 million tons this year. Also included in the goals planned by the Chemical Fertilizer Division, Ministry of International Trade and Industry: a boost in ammonium sulfate exports to more than 1 million tons annually by the end of 1957. Export quota for the current fertilizer year: 470,000 tons.

Output of calcium cyanamide will also be raised—to 650,000 tons, of which 120,000 is destined for export markets.

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| 35 | 35.0 | 16.5 | 1.13 | |
| Form. D | 35.0 | 16.5 | 1.13 | .005% |
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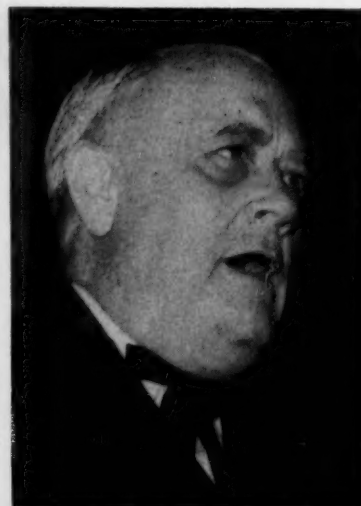
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B & I



SENATOR WILEY: In natural gas battle, he strikes blow for federal control.

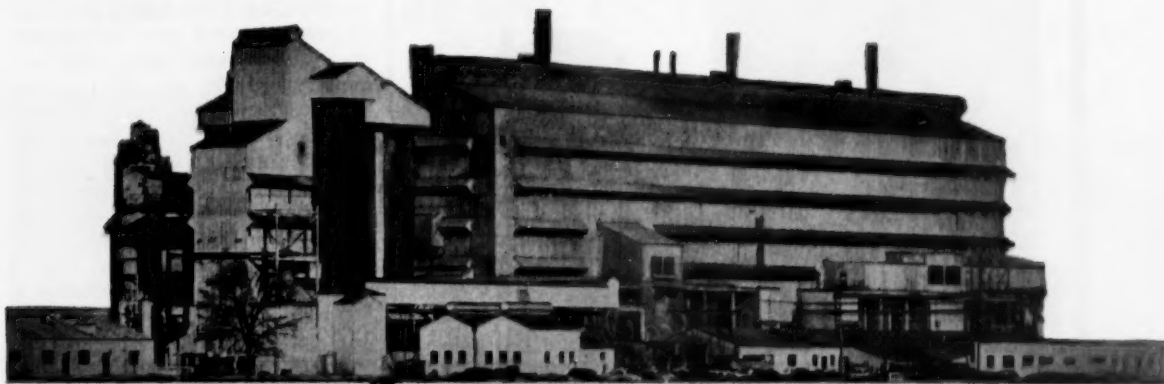
LEGAL

Plea for Policing: Asserting that consumers of natural gas otherwise would be "at the mercy" of a few companies described as "eager to skyrocket rates," Sen. Alexander Wiley (R., Wis.) is putting in a few licks for the people in favor of continuing federal policing of gas wholesaling prices, as prescribed by the Supreme Court last year in the Phillips case. Wiley plans to assemble a municipal consumers' delegation to call on President Eisenhower and ask him to turn down a Cabinet recommendation.

No 'Interim License': At least pending a decision in the government's suit in U.S. District Court at Newark, N.J. Schering Corp. appears to have a firm grip on the patents it took over from its former German parent company. In a consent settlement of the suit filed by Schering last summer in New York (CW, Aug. 14, '54, p. 36), Italian Drugs Importing Co. has been enjoined from making or selling in the U.S. chlorprophenpyridamine maleate "and other compositions claimed in U.S. patent No. 2,567,245 during the life thereof"; or from selling that or similar compounds under the tradename "Chlorhist." Italian Drugs first had contended that Schering was obligated to grant licenses under that and other patents, and that Italian Drugs had an "interim license" on this product.

Unbeaten in Court: Occasionally defeated at the polls, the cause of wa-

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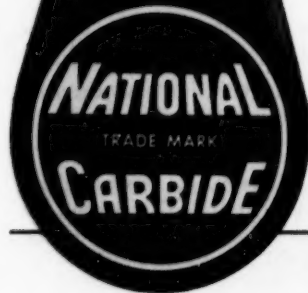


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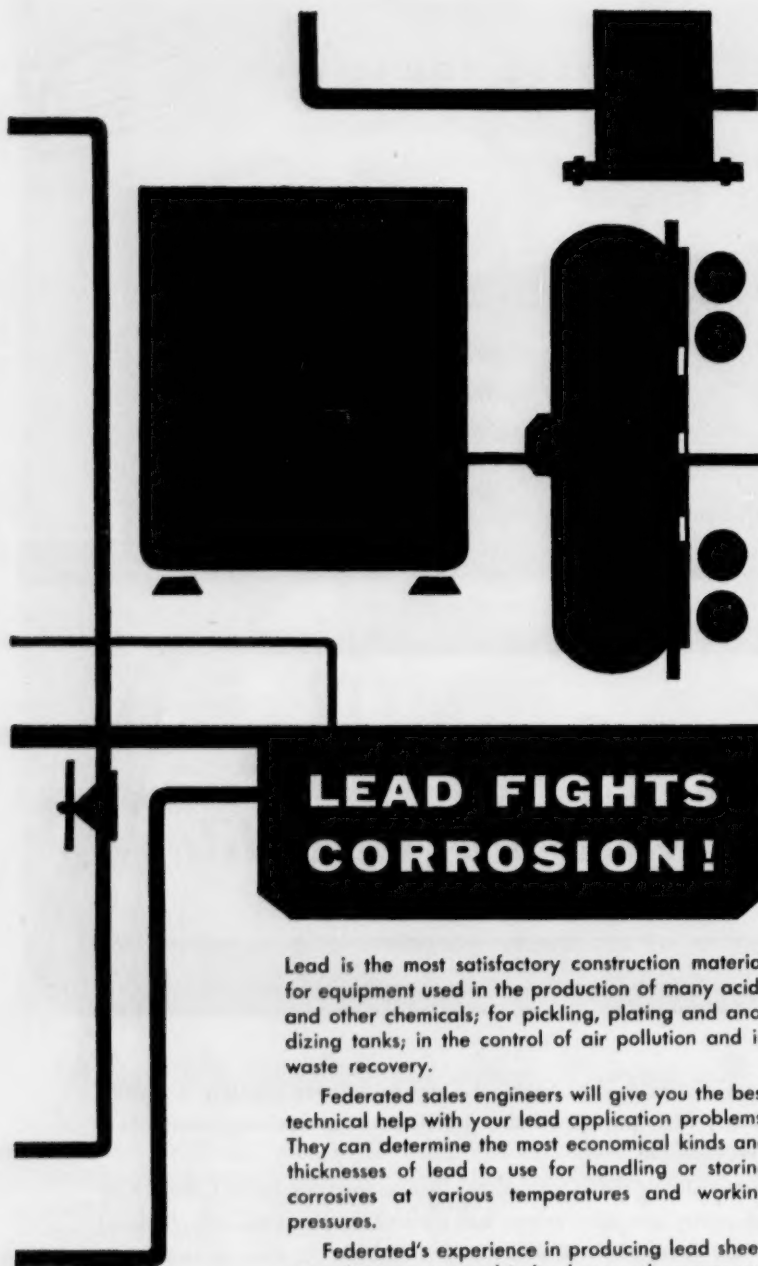


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B & I

ter fluoridation appears to be practically invincible in courts of law. Latest important triumph: in an opinion written by Chief Justice Edward Fairchild, the Wisconsin state supreme court has upheld the right of Milwaukee and other city governments to fluoridate their public water supplies. City councils, the court declared, have the power "to enact such measures in the interest of promoting public health and welfare, even though the act is not based strictly upon an infectious, contagious or dangerous disease." Three times the U.S. Supreme Court has refused to upset similar rulings by other state supreme courts.

KEY CHANGES. . .

Francis A. Gibbons, to senior vice-president, General Aniline & Film Corp. (New York City).

Errol H. Karr, to vice-president, Pennsylvania Salt Manufacturing Co. of Washington (Tacoma).

James B. Lesh, to director, research, The Armour Laboratories (Kankakee, Ill.).

Fred C. Foy, to president and chief executive officer, Koppers Co., Inc. (Pittsburgh).

Paul C. Panagiotakos, to director, sales, National Polychemicals, Inc. (Wilmington, Mass.).

J. S. Wolff, to biochemical sales development manager, B. F. Goodrich Chemical Co. (Cleveland).

Mark Pinkerman, to vice-president, advertising and public relations, Reichhold Chemicals, Inc. (New York City).

John A. Scott, to president, Sinclair Chemicals, Inc. (New York City).

Norbert A. Witt, to vice-president, sales, Noxzema Chemical Co. (Baltimore).

Eugene Easterly, to vice-president, distribution, and **E. G. Hickling**, to vice-president, operations, Linde Air Products Co. (New York City).

DIED. . .

Sir Alexander Fleming, former director, Wright-Fleming Institute of Microbiology, St. Mary's Hospital, London, England.

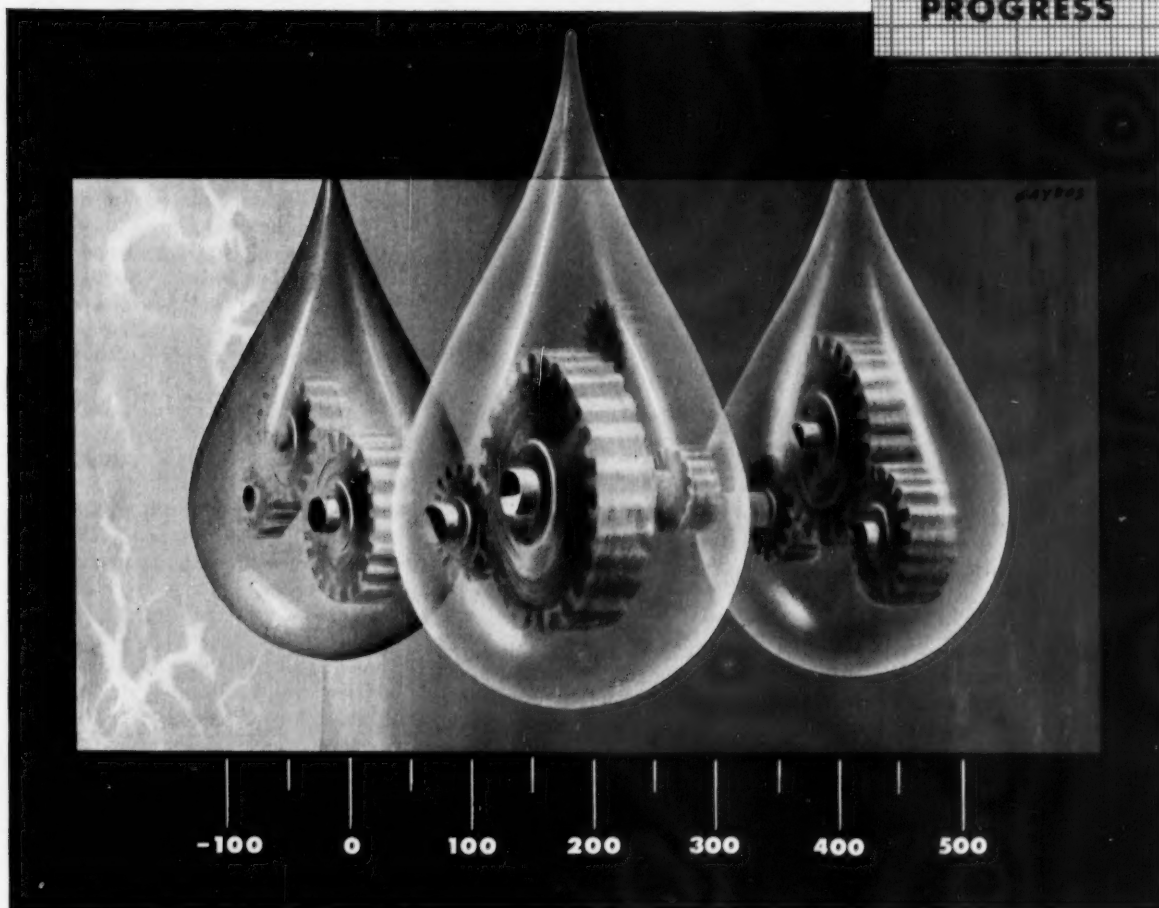
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Chemical Push for Rockets



GOING HIGHER: For rocketry chemicals, more rigorous demands.

Since the close of World War II, rocket designers have been clamoring for a broad array of chemical materials—fuels, plastics, lubricants, coatings, etc.—that can stand up to the increasingly rigorous demands of military rocketry. Their pleas have, with notable exceptions, fallen on unreceptive ears. Most chemical companies, which usually display the flash of a greyhound in going after new business opportunities, haven't worked up enthusiasm enough to do the required research.

This much, however, is sure: the dearth of activity does not mean there is a lack of incentive.

In 1953, the Air Force spent a total of \$482 million for research and development in aircraft and guided missiles and component systems (e.g., propulsion, electronics, armament, equipment). In '54, the figure was \$504 million, and the '55 total should be close to \$600 million. About 85% of this work is farmed out to industry.

For procurement of operational guided missiles (e.g., NIKE air-

craft defense missiles, etc.), Air Force spent \$338.6 million in '54, is spending about \$477 million in '55, will spend an estimated \$603 million in '56. Comparable figures for the Navy are \$127 million, \$171 million, and \$194 million; Army's outlay for missiles, though substantial, is lumped with spending for ammunition.

None of these figures tell much about what would be spent in case of a war. But even a small fraction of the three-services total comes to a figure that should whet the interest of chemical businessmen.

A mass of detailed information on the various facets of the rocket materials problem is available from the government and private rocket-researching organizations. Here, in simple terms, is what rocket developers are seeking in the way of four important chemical products.

Propellants

There is still a big gap between what the military wants and what is currently available (e.g., alcohol-

liquid oxygen, JP-4-nitric acid). The ideal propellant combination (fuel plus oxidizer) would possess a high energy (specific impulse, at least 350 seconds) — materially higher than the fuel energy of hydrocarbons. It would be hypergolic (self-igniting), have a vapor pressure about equal to water. Moreover, it would have a low viscosity, remain liquid down to -65 C, be nontoxic, burn with a virtually smokeless and nonluminous flame, and yield no condensable exhaust products. On top of everything, its cost (taking energy content into account) should be low.

Lubricants

Rocket lubricants see service in fuel pumps, valve stems and controls. They should have the ability to resist corrosive reagents such as fuel oxidizers; they must not be soluble in fuels (some of which are among the best solvents known); and they must exhibit little viscosity change over the -300 to 16 F range. Through all of this, the ideal lubricant will retain a high degree of lubricating efficiency.

Seals

Sealing materials are needed for fuel systems among other uses. They must resist extreme conditions of oxidation and resist chemicals that cause ordinary sealing materials to swell. High elasticity is also vital, and ideally a seal material should not change much, physically, between -65 and 160 F. Thus far, no material that satisfactorily stands up to hydrogen peroxide (a fuel with several desirable features) for extended periods has been found.

Pressurizing Bag

One ingenious way of getting around a fuel pumping system (and thereby effect design simplifications) is by the use of a pressurized bag in the fuel tank; as the bag expands, it forces fuel into the combustion chamber. This bag, a likely opportunity for flexible plastics,

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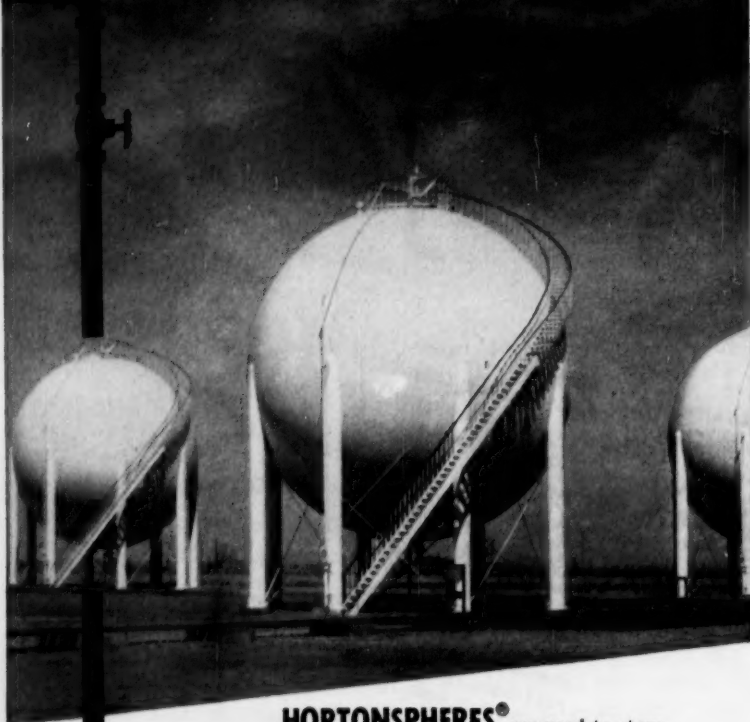
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2853

How to make **VOLATILE PETROCHEMICALS** Behave During Storage



HORTONSpheres® are used to store volatile petrochemicals and to prevent evaporation loss. They're spherical vessels designed for the holding of such liquids as butanes and propanes . . . no vapor can escape as long as the internal pressure in the Hortonsphere does not exceed the pressure relief valve setting.

Shown above are some of the four 6,000-bbl. Hortonspheres built for Celanese Corporation of America at Pampa, Texas. Used for butane storage they have a working pressure of 75 lbs. per sq. in.

If you have trouble with storing volatile liquids, write our nearest office. CB&I engineers can help you.



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RESEARCH

must be nonporous, must expand to force the last drop of fuel out of the tank. In addition, it must resist two years of intimate contact with the fuel and oxidizer, remain in reasonable condition on exposure to hot gases. The volatile pressurizing liquid, contained in the bag, must not entrain in the escaping propellant, which can cause erratic operation of the motor.

Other Needs

Refractory coatings that can survive the hot, corrosive jet blast; rocket-skin materials that can push back the thermal barrier, exceed the temperature resistance (about 1500 F) of special alloys now available; insulators to keep liquid oxygen boil-off to a minimum, are just a few of the other requirements of rocket designers.

Security considerations, among other things, render it virtually impossible to cover all the materials that have been tried in these applications. But companies that want to learn more about rocket makers' chemical needs can get specifications and a recap (barring classified data) of previous research from rocket-researching companies. Reaction Motors, Inc. (Rockaway, N.J.), for example, is eager to talk to chemical men, discuss the merit of their ideas and how to evaluate new materials. In this fashion a researcher could get—quickly—even more information than is contained in the published literature.

Prospective rocket materials researchers can get the same information from the government—but by going through channels.

Other rocket makers include: Aerojet-General, Bell Aircraft, Curtiss-Wright, General Electric, North American Aviation. Propellant-probing firms (which evaluate products in this field) include all of the above and: Rohm & Haas, Olin Mathieson, Wyandotte, Thiokol, Shell, Atlantic Refining, Phillips Petroleum, Standard Oil of Indiana, Hercules Powder (Allegany Ballistics Laboratory).

It's obvious that developing the materials needed for the rocket program is no shooting-fish-in-a-barrel proposition. It's a stiff challenge for chemical research; but the potential reward is great.



organic chemicals

from Rohm & Haas Company

Acrylic monomers

ACRYLIC ESTERS—A wide range of monomeric acrylate and methacrylate esters is available, providing a series of monomers whose polymers vary from very soft, rubber-like, film-forming materials to hard, transparent plastics. These esters may be polymerized by a variety of processes—bulk, suspension, solvent, and emulsion. They copolymerize readily with a large number of other monomers, permitting considerable modification in the physical properties of the resulting copolymers. *Typical uses:* Polymers and copolymers of monomeric acrylic esters are useful as thermoplastic sheets and molding powders, solvent coatings, binders for explosives, heat-resistant elastomers, adhesives, water-soluble thickeners, and emulsions for the textile, leather, paper, and paint fields. They are also used as intermediates for pharmaceuticals, photographic chemicals, and detergents.

ACRYLIC ACIDS—Both glacial acrylic and glacial methacrylic acid are available. These water-soluble acids may be polymerized to water-

soluble polymers, or they may be copolymerized with other monomers to obtain polymers having varying degrees of solubility in alkali or water. *Typical uses:* The use of small quantities of these acrylic acids in copolymers can: 1) provide a product which can be vulcanized with metallic oxides without use of sulfur, or can be cross-linked with diepoxides, diamines, glycols, etc., 2) increase the mechanical stability of emulsions, 3) improve adhesion, 4) increase resistance to attack by oils. Amphoteric copolymers may be produced by copolymerization with basic monomers such as vinyl pyridine. The acids also serve as intermediates for the production of special esters such as glycol diacrylate and dimethacrylates.

OTHER MONOMERS—*Calcium acrylate* is a water-soluble monomer which may be used for soil stabilization. *Methacrylamide* is another water-soluble monomer, which can be polymerized to a water-soluble polyamide, or copolymerized to introduce a reactive group for cross-linking purposes.

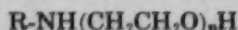
The following acrylic monomers are available:

Commercial Quantities : Methyl acrylate • Ethyl acrylate • Butyl acrylate • 2-Ethylhexyl acrylate • Methyl methacrylate • Ethyl methacrylate • Butyl methacrylate • Hexyl methacrylate • Decyl-octyl methacrylate • Lauryl methacrylate • Stearyl methacrylate • Glacial methacrylic acid

Pilot Plant Quantities : Octyl acrylate • Methoxyethyl acrylate • Butoxyethyl acrylate • Glacial acrylic acid • Calcium acrylate • Methacrylamide

Priminox polyethoxy amines

These amines have the general formula:



where n is the number of ethoxy groups and R represents a tertiary-alkyl group of 18 to 24 total carbon atoms. Priminox® 43, a liquid at room temperature, has one ethoxy group. It is soluble in aromatic hydrocarbons and common organic solvents. Priminox 10, also a liquid at room tem-

perature, has 5 ethoxy groups. It is slightly soluble in oil and water. Priminox 21 has 15 ethoxy groups, is a paste at normal temperatures, and is soluble in water and aqueous acids. Priminox 32 has 25 ethoxy groups, is a solid at normal temperatures, and is soluble in water and aqueous acids. The Priminox amines effectively reduce surface and interfacial tension over a wide pH range, and are useful in low-foaming, efficient detergents. They are also suggested for use as bactericides, corrosion inhibitors, and fuel oil additives. Commercially available.

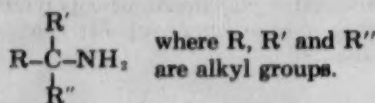
Methylamines

Rohm & Haas methylamines, monomethylamine: CH_3NH_2 , dimethylamine: $(CH_3)_2NH$, and trimethylamine: $(CH_3)_3N$ are very low-cost sources of basic organic nitrogen. All three amines are available in either aqueous or anhydrous form. *Typical uses:* The dimethyldithiocarbamates and tetramethylthiuram sulfides have shown usefulness as agricultural fungicides, accelerators for rubber vulcanization, and animal and insect repellents. Surface active agents are available by several synthetic routes starting with monomethylamine. Monomethylamine also is used in the preparation of p-methylaminophenol, the sodium salt of which is utilized in photographic developers. 1,3-dimethylurea, produced from monomethylamine,

is an intermediate in the synthesis of theophylline and caffeine. Monomethylamine is a raw material for a number of sympathomimetic drugs (e.g., N-methyl-phenethylamine or N-methyl-phenylpropylamine derivatives) and analgesics not related to or derived from morphine. Dimethylaminoethanol, an intermediate for local anesthetics and antihistamines, is prepared from dimethylamine. The preparation of choline chloride, widely used poultry feed additive, employs trimethylamine. Other uses for the methylamines include the production of high molecular weight quaternary ammonium salts, acidic-gas absorbents, and explosives. Commercially available.

Primene alkyl amines

The Primene® alkyl amines, Primene JM-T and Primene 81-R, primary amines, are free-flowing liquids having the general formula:

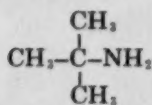


Primene JM-T contains 18 to 24 carbon atoms; Primene 81-R, 12 to 15 carbon atoms. These products undergo most of the reactions typical of straight-chain primary amines. In some cases, however, their reactivity is unusual. They react,

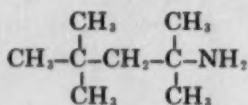
for example, with formaldehyde to yield stable, monomeric azomethines ($RN=CH_2$). *Typical uses:* The color stability, resistance to oxidation, fluidity, and relatively little variation of viscosity with temperature change of the Primene amines are advantageous in oil additives. Other suggested applications for derivatives include bactericides, fungicides, corrosion inhibitors, anti-oxidants, textile chemicals, and pharmaceutical products. One derivative, the acetate salt of Primene JM-T, is available from Rohm & Haas Company under the tradename: Primac JMA-T. Commercially available.

t-Alkyl amines

These amines, t-butylamine and t-octylamine, are light-colored liquids having the structural formulae:



t-Butylamine



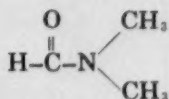
t-Octylamine

Tertiary-butylamine boils at 44° to 50° C., tertiary-octylamine at 137° to 143°C. These amines undergo most of the reactions common to the primary amines, with some few exceptions. When

reacted with aldehydes, for example, t-butylamine and t-octylamine yield stable, monomeric aldimines ($\text{R}-\text{N}=\text{CHR}'$); with cyanogen chloride, stable monomeric cyanamides ($\text{R}-\text{NH}-\text{CN}$). The t-alkyl primary amines can be alkylated and alkoxyated to produce secondary amines, with the formation of very little tertiary amine. *Typical uses:* intermediates for rubber chemicals, insecticides, bactericides, oil additives, photographic chemicals, pharmaceuticals, surface active agents, corrosion inhibitors, and dyestuffs. Commercially available.

Dimethylformamide

Dimethylformamide is a colorless, stable, relatively high-boiling liquid of strong and selective solvent powers. Its molecular weight, melting point, and viscosity are low; its thermal stability is high. Its structural formula is:



Dimethylformamide is soluble in both polar and non-polar materials, and is an unusually good solvent medium for a number of organic reactions. *Typical uses:* Dimethylformamide may be used

to purify and package acetylene and other gases. It is an excellent solvent for polyacrylonitrile, permitting coagulation in water during fiber spinning operations.

Dimethylformamide may be employed to separate aromatic hydrocarbons from naphthenic and aliphatic compounds, suggesting its use in petroleum refining.

As a solvent for coating resins, dimethylformamide facilitates the production of "high-solids" coatings of low viscosity. Among the resins soluble in dimethylformamide are: acrylics, vinyls, alkyds, polyamides, cellulose, polystyrene, phenol-formaldehyde, natural and synthetic rubber. Commercially available.

Dytol fatty alcohols

The Dytol® fatty alcohols are long-chain compounds having the general formula $\text{CH}_2(\text{CH}_2)_n\text{OH}$. In Dytol A-24, $n=9$ to 15; in Dytol B-35, $n=9$ to 17; and in Dytol E-46, $n=13$ to 17. Typical alcohol compositions of the various Dytol alcohols are given in the accompanying table.

The Dytol alcohols undergo many of the chemical reactions typical of alcohols. They may be ethoxylated, sulfated, esterified, halogenated, and dehydrated. They may be oxidized to aldehydes and carboxylic acids. *Typical uses:* As interme-

diates, the Dytol alcohols are useful in additives for cosmetics, polymerization regulators for rubber, textile finishing and softening agents, pharmaceutical quaternary ammonium compounds, and emulsifiers and detergents. Commercially available.

| | Dytol A-24 | Dytol B-35 | Dytol E-46 |
|--------------------------------|---------------|---------------|---------------|
| % Decyl (C_{10}) | 2.0 | 2.5 | none |
| % Lauryl (C_{12}) | 68.0 | 62.0 | none |
| % Myristyl (C_{14}) | 28.0 | 24.0 | 4.0 |
| % Cetyl (C_{16}) | 2.0 | 11.0 | 34.0 |
| % Stearyl (C_{18}) | none | 0.5 | 62.0 |

Alkylphenols

Octylphenol, a light-colored, flaked solid and nonylphenol, a pale amber liquid, have these formulae:



Octylphenol



Nonylphenol

Both alkylphenols are insoluble in water, but soluble in many common organic solvents. They undergo most of the reactions common to phenols; namely, nuclear substitution, esterification, etherification, and salt formation. *Typical uses:* Reaction with alkylene oxides yields non-ionic surface active agents, the solubility of which vary with the number of alkoxy groups. The alkyl-

phenols may be reacted with aldehydes to produce phenolic resins; used in small quantities with other phenols in the preparation of phenolic resins, the alkylphenols serve to improve water resistance, oil solubility, and electrical properties. They also act as internal plasticizers. The reaction of alkylphenols with formaldehyde or with sulfur halides yields intermediates for lubricating oil antioxidants and detergents. Other products available through octyl- and nonylphenol include fungicides, germicides, rubber chemicals, pharmaceuticals, adhesives, and corrosion inhibitors. Octylphenol, in addition, stabilizes ethyl cellulose against deterioration by heat and light. Commercially available.

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Thickening agents

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HSPA'S BAVER above, (left): In palm-fringed laboratories his research crew is . . .

Coaxing New Chemicals Out of the Cane

Sugar doesn't just grow; it takes careful planting, attentive cultivation, and torrents of chemicals to bring a good crop safely to harvest. That lesson—second nature by now to Hawaiian sugar planters—helped the island bring in a record 1.1 million tons of raw sugar in 1953, roundly belying the niggardly forecasts of early settlers.* A large measure of credit for this achievement belongs to the Hawaiian Sugar Planters Assn.'s 60-year-old experiment station, which pursues an ambitious program of research in the shade of the island's swaying palms.

Its initial task of increasing production well in hand, HSPA last week turned to more urgent business, revealed that it had employed organic chemist H. Wayne Hilton to head long-term research into the basic nature of sugar. Hilton, who left Visking Corp. to take the HSPA job, will spearhead the Hawaiian end of a joint (with Imperial College of Tropical Agriculture, Trinidad, B.W.I.) effort to develop industrial nonfood uses for sugar.

This is not an especially new idea within the sugar industry. By-products investigations have, for some time, been an important part of HSPA's scientific activities. This effort (tied in with work by Crown-Willamette Paper Co. of Camas, Wash.) has

yielded a process of converting bagasse into paper pulp. Economic feasibility of the method is now being weighed by a sugar industry committee and new cost data should be revealed soon.

By-products research has also produced cattle and poultry feed from waste molasses and a concrete aggregate utilizing bagasse in place of sand and gravel. Development of the latter is being pushed in the hope of perfecting a concretelike material that can be sawed and worked like wood.

Less successful were HSPA's attempts to come up with commercially feasible by-product furfural, waxes, alcohol, acids, antibiotics. Production of all of these from sugar cane is technically possible, reports HSPA, but economically impractical.

All of this, however, is classed as short-term research. Encouraged by the promising sucrose-ester detergents (*see box*) developed by Foster D. Snell, Inc., under the auspices of Sugar Research Foundation, HSPA is swinging over to studies of broader scope. The plan, however, is not to edge into SRF's sphere, which is the sucrose molecule and derivatives.

HSPA, guided by Hilton, will stay with by-products, albeit chemical by-products. HSPA researchers, states experiment station chief Leonard Baver, will strive to determine "what organic chemicals sugar cane makes besides sugar, and what can be done with them."

This program could prove rewarding if HSPA chemists can equal their successes in dealing with production

Sweet Music for Sugar Growers

Last week, more than six months after their debut (*CW*, Sept. 11, '54, p. 49), Sugar Research Foundation's sucrose-ester edible detergents were still evoking murmurs of covetousness in the chemical industry. Although negotiations between SRF and prospective producers are understandably confidential, it is known that 29 companies—including most of the principal makers of surface-

active agents—have expressed an interest in the detergents. Commercial cost should be low. Regarding the status of the novel products, SRF President Henry Hass last week had this to say: "A licensing policy has been worked out and awaits approval by the foundation's executive board of directors. One firm expects to be producing the new detergent by late this summer."

*Who, in the late 19th century, asserted: "Maximum possible acreage that can be annually cropped—34,200 . . . Maximum possible yield of sugar—84,000 tons. The 1953 crop, by contrast, was raised on 221,542 acres.

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RESEARCH

problems. A recent case in point is the application of ion-exchange membranes to desalt sugar juices, boost yields of sugar (one pound for each pound of salt removed). Hawaiian Commercial & Sugar Co. plans to build (later in the year) a pilot plant utilizing this method. HSPA researchers also have developed a new corrosion inhibitor to counteract the rusting of agricultural machinery by chemical weed-control mixtures. A patent reportedly has been applied for, but the association still isn't divulging details of the discovery.

Among other recent chemical developments in Hawaiian sugar cultivation is the success of phenylmercuric acetate in preventing cane seed rot, thereby increasing germination; and the progress in using chemicals to counter cane tasseling, where maleic hydrazide is proving effective.

Other herbicidal compounds consumed by Hawaiian planters are 2,4-D, C.M.U. and trichloroacetic acid. But CADE (concentrated activated diesel emulsion), developed under HSPA auspices in 1939, is still the Hawaiian sugar industry's most widely used weed fighter. It's activated, incidentally, with sodium pentachlorophenol.

Patents on this and other HSPA inventions are controlled by Hawaiian Development Co., established recently to handle licensing and exploitation. Income derived from this activity will be turned back into the station.

Today, the station has a staff of 203 and an annual budget in excess of \$1.5 million. A nonprofit, cooperative agency, it's supported by Hawaii's 28 sugar plantations. Cost-wise, the station's principal activity is the development of new varieties of cane from breeding stock obtained all over the world. Development of agricultural machines accounts for the second largest chunk of money, while short-term by-products research has been third.

As the emphasis shifts to long-term chemical studies, the last-named part of the program should diminish proportionately. For a start, the organic chemistry research program will get about \$25,000/year. That's not a fortune by modern standards of research spending, but it's enough to launch a serious attempt at coaxing new chemicals out of the cane.

Vitalized Vitamin

Over the past few years, vitamin P has had close clinical scrutiny for radiation sickness (CW, Nov. 17, '51, p. 32), tuberculosis, and a range of other ailments.* But the drug's bid for commercial eminence now appears to hinge on its efficacy against the common cold.

Recently, physicians Morton Bis-kind (Westport, Conn.) and William Martin (New York) treated 69 respiratory patients (with colds, influenza, etc.) using a combination of vitamin P and ascorbic acid, reported marked success. Although strictly a pioneering venture, the results of this experiment may presage a boon to cold therapy.

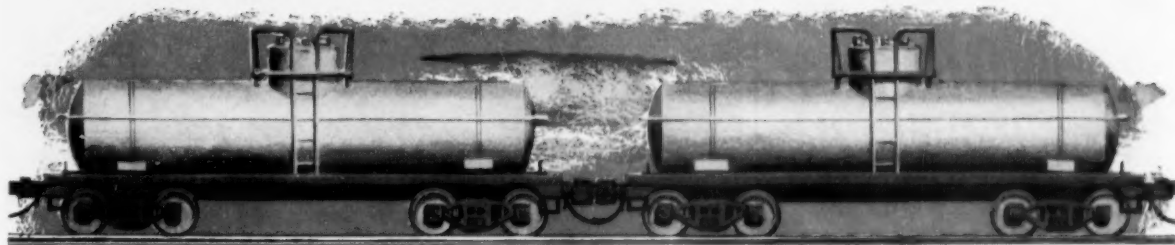
Standing to benefit from any surge in vitamin P demand are U. S. Vitamin Corp. (New York), Eli Lilly (Indianapolis), and National Drug Co. (Philadelphia). It's no secret that U. S. Vitamin, whose interest in the product dates back to 1946, is putting top emphasis on vitamin P development. The company has nearly a hundred clinical research investigations under way using C.V.P. (its formula combining vitamin P and ascorbic acid), expects sales to double before long.

The clinical promise of vitamin P is based on the drug's effect in decreasing capillary permeability. Because of this property, it's able—believe some medical men—to relieve the symptoms of a variety of seemingly unrelated ills. If it succeeds in stymying the common cold, the citrus-derived substance might easily break into the top-profit echelon of chemical remedies.

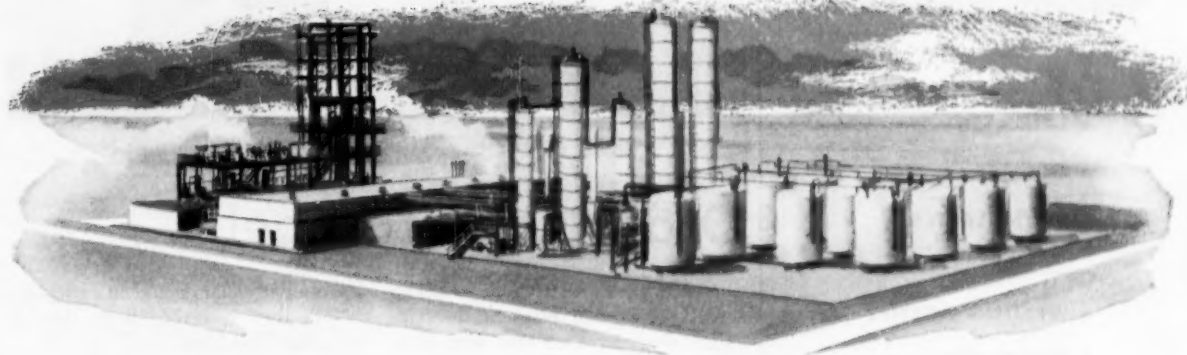
Arthritis Drug Contender: A new variation of phenylbutazone may overcome the older drug's occasional side effects in arthritis treatment (CW, Mar. 12, p. 70). The modification has a phenylthioethyl group in place of phenylbutazone's butyl side chain, is absorbed faster by the body—an advantage in minimizing toxicity. Still experimental, the newcomer is part of a series of phenylbutazone derivatives screened at the National Institute of Health (Bethesda, Md.), New York's Goldwater Memorial Hospital, Mount Sinai Hospital, and College of Physicians and Surgeons.

*Including: Retinal hemorrhage in hypertension and diabetes, habitual abortion, and postsurgical bleeding.

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These alcohols are the first of a wide selection of Oxo chemicals and of products derived from Oxo chemicals. One example of these derivatives is Primary Amyl Acetates, now available in tank-car quantities. Write today for technical information on Primary Amyl Acetates, or on Primary Amyl or Primary Decyl Alcohols.

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RESEARCH



CLOUSER AND SKOLNIK: Their new language method aims to bring . . .

Order Out of Babel

Chemical firms, striving to keep abreast of foreign research developments, don't have an easy time of it: exotic patents, journals, etc., come in 38 different languages.* Complicating this linguistic snarl is the fact that European scientific literature frequently carries no clue to the language identity of individual articles or sections. By last week, a vigorous attack on this problem was paying off for Hercules Powder.

A new diacritical tool fashioned by the company's technical information staffers was opening the way to speedy translations. The method's key: handy tables of the chief differences between written languages.

The inventors, Benn Clouser and Herman Skolnik, report that their brain child's main use so far has been in cataloging literature from abroad. They've used it, too, in determining the language of foreign correspondence when the postmark was no guide to the written language.

Hercules' staff of three translators (who collectively master 14 languages) doesn't lean very heavily on the guide, but that's to be expected—it's intended primarily for monolingualists, who must

know a particular document's language before they can take it to the appropriate translator.

Toughest of the scientific languages to tell apart are the 27 that are based on the Latin alphabet. The remainder (Arabic, Bulgarian, Chinese, Greek, Hebrew, Japanese, Macedonian, Russian, Serbian, Ukrainian, and White Russian) can be readily identified by comparison with known specimens. Characteristics of the Latin alphabet languages include diacritical marks (except in English, Latin and Interlingua), digraphs and trigraphs (combinations of two and three letters to represent sounds arbitrarily), and frequently occurring words.

Backbone of the Clouser-Skolnik system is a compilation of these language earmarks in easy-to-use tables. These tables can't translate a word. But they save time and confusion in the handling and processing of foreign research information.

Water Test: According to Oxford University researchers, the dyestuff, *kernechrot* (nuclear fast red), provides a new quick test for distinguishing between tap and distilled water. Key: a color change produced by small variations in calcium.

Cross-Linking Note: Recent studies

* Among them: Afrikaans, Arabic, Croatian, Flemish, Esperanto, Estonian, Finnish, Greek, Hebrew, Icelandic, Interlingua, Latin, Latvian, Lithuanian, Macedonian, Rumanian, Serbian, Slovak, Slovenian, Ukrainian.

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An inherently flexible vinyl copolymer emulsion, Resyn 12K-51 deposits strong, tough, water-resistant films with very high pigment binding power. Further plasticizing is generally unnecessary.

PROPERTIES:

Tensile on free films, 2,200 psi. Elongation 300%.

Flexibility equivalent to about 10% plasticizer on ordinary polyvinyl acetate solids. Flexibility permanent—no migration or evaporation.

Binding Power significantly higher than ordinary polyvinyl acetate, permitting higher pigment:resin ratios with improved physical properties. Write for reprint of article on critical pigment volume concentration studies published in October 7 issue of "Paint, Oil and Chemical Review."

Water Resistance far superior. For example, on standard scrub test Resyn 12K-51 films withstand about 500 wet rubs, while ordinary polyvinyl acetate emulsion films fail in less than 50 wet rubs.

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pH—4-5

particle size—mostly under one micron

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The first day 2,000 workers applied—at last account, 11,000! Plenty to construct and operate the initial unit of a plant which ultimately will produce 250 million pounds of aluminum sheet and foil annually.

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| New York | 4 | Digby | 4-1600 |
| Baltimore | 1 | LExington | 9-0400 |
| Pittsburgh | 22 | COurt | 1-6220 |
| Cincinnati | 2 | DUnbar | 2900 |
| Chicago | 7 | WAbash | 2-2211 |

RESEARCH

on the β -irradiation of polystyrene at Washington University (St. Louis) reveal that degradation ensues in the presence of air, while further polymerization takes place when air is excluded. Deuteron bombardment of polystyrene in a helium atmosphere causes extensive cross-linking.

Spreading Out: Three firms made research expansion news this week:

- Virus research will be housed in a new laboratory under construction by Warner-Chilcott Laboratories in Morris Plains, N.J. The structure will quadruple the firm's present research space.

- And two research buildings are being added to the laboratories of Linde Air Products Co. (division of Union Carbide and Carbon Corp.) at Tonawanda, N.Y. Building costs are estimated at \$400,000. Completion is scheduled for this fall.



Ready to Go

PROJECT engineer Harry Pearlman of North American Aviation takes a close look at a model of the 50,000-watt nuclear reactor his company is planning to build for Armour Research Foundation (Chicago). Granting of the contract was revealed jointly last week by ARF and North American Aviation. To cost an estimated \$0.5 million, the Armour reactor will be financed by Midwestern industry, used solely for research.

THIS IS **MERCHANTS**



This is Charles M. Morgan, District Manager of our Louisville Office. After experience with du Pont prior to Army service, he joined our Cincinnati Office in 1946 as a salesman for the Kentucky territory. When Louisville was opened as a separate branch in 1953, Mr. Morgan was appointed Manager.

From our newly-constructed Louisville warehouse, four salesmen cover Kentucky, southern Indiana and northeastern Tennessee. In order to service this wide area, we have also a stockpoint at Erwin, Tennessee.

Sales Offices and Warehouses: Chicago, Cincinnati, Denver, Louisville, Milwaukee, Minneapolis, New York, Omaha.
Stock Points: Albuquerque, Aurora, Ill., Erwin, Tenn., S. Norwalk, Conn.

ACIDS • ALKALIS • FUNGICIDES • SURFACTANTS
CHLORINATED SOLVENTS • LAUNDRY COMPOUNDS
EMULSIFIERS • CHEMICAL SPECIALTIES
DRY ICE • SOAPS



MERCHANTS CHEMICAL COMPANY, INC.

60 East 42nd Street, New York 17, N. Y.

Distributors of industrial chemicals for over a quarter century.



MORE THAN COFFEE: Seminar goodwill may open doors for detail men.

Low-Key Turns the Latch

"Free-for-all" is just about the only description for selling today. Budgets mushroom, salesmen spiel mellifluously, service peps up. Promotion gets gaudier, gushier, and more and more aggressive. But regardless of what extremes the sales frenzy may reach, there's one field where the razzle-dazzle technique won't work. Namely: pharmaceuticals.

Instead, present-day drug selling relies on subtlety for the open-sesame. Medical education is the means; sales are the end. Squibb, Pfizer, and Winthrop-Stearns ring the register with medical movies; Wyeth, and Smith, Kline & French capture sales with closed-circuit television (CW, Mar. 12, p. 57); and American Cyanamid's Lederle Laboratories stages day-long medical symposiums on a city-by-city basis in addition to a film program.

Two points characterize all this promotion:

- Presentation of detailed technical information.
- Almost complete absence of conventional advertising.*

How does this peculiar promotion—advertising that's hardly a peep—sell pharmaceuticals? Step-by-step, Lederle does it this way:

* Most companies present topics in fields in which they have soluble products, have detail men on hand when films are shown, usually follow up with a sales call after the show (sometimes featuring the product discussed).

- Organization: Cities are selected to provide the best coverage of the most doctors, but no specific plan is followed. This year, Lederle will cover at least 12 locations (1954: 37 cities). Once a site is picked, educational director Joseph Young visits the city one month before the program date.

Topic and speakers are discussed with agents of the local medical society and if the society has nothing definite in mind, the firm stands ready to suggest a suitable program. Topics

range from "degenerative diseases" to "trauma" and "emergencies."

Lederle then arranges accommodations, meals, and even cocktails. Invitations and postage are furnished to the local society, which, in turn, prepares the mailing list. Usually, all M.D.'s within a 150-mile radius are invited (beyond that area, they don't come).

Three days before the "premiere," Young returns, brings along an assistant, Miss Matilda Janis. While he checks final arrangements, Miss Janis sets up a ladies' program—a fashion show, card party, or even a hair-styling demonstration.

Comes the big day and physicians stream in; at a recent Detroit session, 600 attended six lectures on office treatment, which included "cardiac auscultation" and "management of the primiparous woman."

- Promotion injection: Basically the format is institutional, but Lederle does manage to secure a direct plug. Speakers (sometimes sincerely appreciative) will make unsolicited mention of the company; a pamphlet rack contains company literature; area detail men mingle socially with the medics; at lunch, a Lederle M.D. at the speakers table is introduced; both printed program and the chairman briefly mention Lederle cosponsorship. And, for the wives, there are souvenir mementoes; pocket brushes and playing cards—imprinted with Lederle's name.

Profit: The big gain for the firm,



MORE THAN FACTS: New medical advances will boost and better practices.

At last!

A TRUE VINYL MASTIC!

Complete protection in a single coat—10 mils thick.

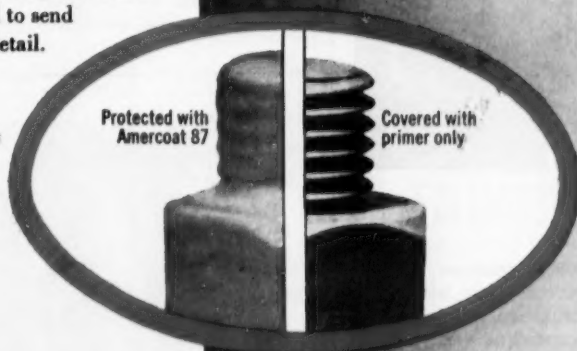
Amercoat No. 87 will cut your maintenance costs because one coat gives you the thickness and protection previously available only through the application of multiple coats.

Amercoat No. 87 is the brand new solution to an old problem, for it combines the time-tested chemical and weather resistance of a vinyl with the extra thickness that was heretofore available only in conventional mastics.

Amercoat No. 87 is easily applied with standard industrial spray equipment. Only one cross-spray coat, over a primed surface, is required for complete protection. Because Amercoat No. 87 is a true vinyl, it is not limited to black, but is available in a variety of colors.

You can save up to 50% of your labor costs with Amercoat's new vinyl mastic No. 87. We will be pleased to send you a bulletin describing this new coating in detail.

Notice that the sharp bolt threads, welds and sharp corners are completely protected with one coat of Amercoat No. 87—10 mils thick!



Amercoat

CORPORATION

Dept. BC

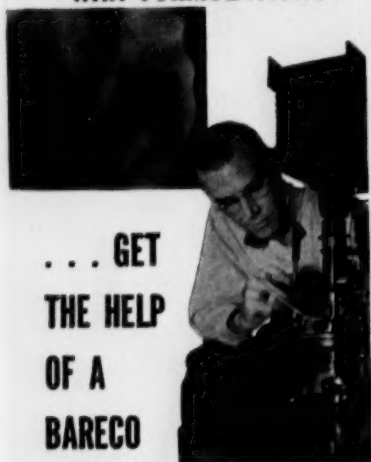
4809 Firestone Blvd.,
South Gate, California

EVANSTON, ILL. • KENILWORTH, N.J. • JACKSONVILLE, FLA. • HOUSTON, TEX.



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PROBLEM
IN

WAX FORMULATIONS?



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THE HELP
OF A
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Wax is Bareco's business . . . their *only* business, and because of this specialization you get the finest microcrystalline wax available on the market today plus the technical help of men who have devoted their professional lives to studying the wax application industries.

The complete line of Bareco Microcrystalline Waxes includes:

Be Square 190/195 melting point
Be Square 190/185 melting point
Be Square 170/175 melting point
Starwax 180 minimum melting point
Ceraweld 155 minimum melting point
Ceratak 155, 165 minimum melting point
Victory 155, 165 minimum melting point
Petronauba emulsifiable petroleum wax for polish formulations.

Write for samples, specifications, and prices



BARECO OIL CO.
BOX 2009 • TULSA, OKLA

DISTRIBUTION

however, stems not from the direct pitch, but from, as Young describes it, "the better rapport between the profession and the pharmaceutical house. We hope . . . we open some doctors' doors. That's all we expect."

If Detroit reaction is typical, the concern should now be enjoying fulfilled expectations. Said some doctors: "I'd have given a great deal for something like this a few years ago," "Yes—my doors will swing open easier."

Lederle spent "well over \$6000" for the day at Detroit, excluding time and expenses of company personnel. Auditorium and equipment rental, luncheon for the guests, expenses of speakers, and most incidentals are also billed to the firm. Attenders supply their own transportation, however.

Naturally, Lederle believes that results warrant the price, but apart from testimonials and the support of its salesmen, no definite relation between sales and low-pressure advertising has come to light. But not, perhaps, for long. Research on results has just begun.

Meanwhile, the program will continue on a less extensive, yet still-

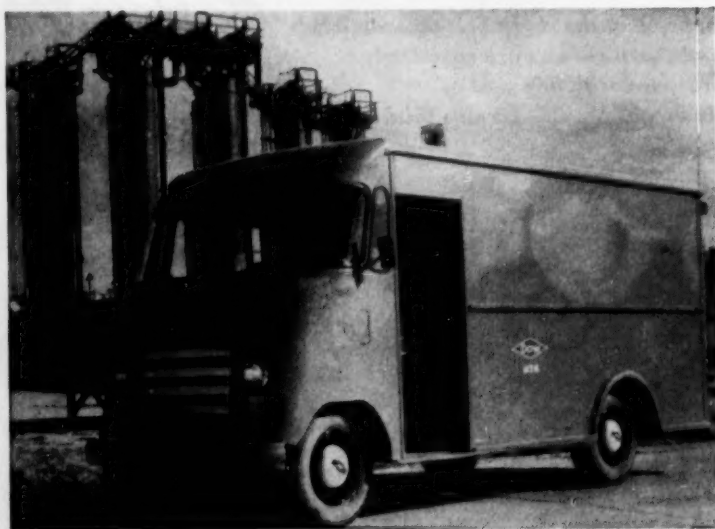
efficient scale. All in all, Lederle is satisfied that there's profit in luncheon and lectures for the medics; in fashion, bridge and tea for their wives.

Ammonia in Dixie

When the *City of Mobile* made fast to the pier of Mid-South Chemical's new fertilizer distribution center at Memphis, Tenn., last fortnight, it marked a first: the first water-borne shipment of ammonia from Phillips Chemical's Adams Terminal on the Houston Ship Channel. For Mid-South, too, the 800-ton cargo had meaning: it was one of the first shipments to reach the center.

Mid-South's plans for fertilizer selling are big. Specifically, the firm is putting into operation this month:

- A rail, river, and highway transfer terminal.
- A 5-million gal. (12,000 tons) storage capacity, complete with specialized pumps and ammonia transfer lines.
- The chartered barge, *City of Mobile*, and 100 tank cars, 25-ton capacity each.

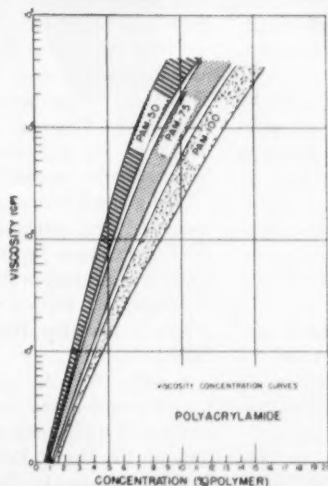
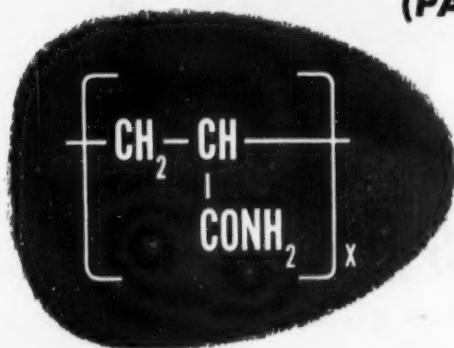


Proof of Product Begins at Home

DRAWN UP before Dow Texas Division's styrene finishing plants, this van is the company's recent addition to its automotive fleet.

The truck sports an all-reinforced-plastics body. Even the front grille elements are molded of material in which styrene is an intermediate.

Cyanamid introduces a new
Water Soluble Polymer
POLYACRYLAMIDE
(PAM)



CHECK THESE ADVANTAGES:

- White, free-flowing powder
- Odorless
- Easily dissolved in water
- Soluble in water under all pH conditions
- Viscosity of dilute solutions practically constant during storage
- Contains essentially no ash
- Rendered insoluble by heat
- Readily methylolated with formaldehyde
- PAM-75 available in Semi-Commercial Quantities**
- PAM-50 and PAM-100 available in Research Quantities**

For use in:

- Adhesives
- Thickening Agents
- Paper Coating
- Photographic Arts
- Cements
- Suspending Agents

SAMPLE AND TECHNICAL DATA



AMERICAN
Cyanamid
 COMPANY

American Cyanamid Company
 New Product Development Department, Section B
 30 Rockefeller Plaza, New York 20, New York

Gentlemen: Please send me:

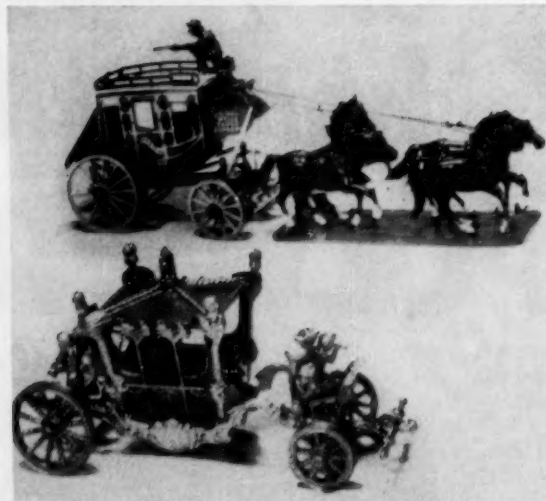
- ☐ Literature on Polyacrylamide
- ☐ Sample of PAM-50 ☐ PAM-75 ☐ PAM-100
- ☐ Price Information

Name _____

Position _____

Company _____

Address _____



ON SAME SIDE: Whether it's 'naturally' tough acetate (left) or 'five times tougher' styrene (right) . . .

Quality's the Battle Cry

By the time the 52nd American Toy Fair closed last week this much appeared certain: toy makers were predicting their best business in years. But for at least one segment of suppliers, the plastics manufacturers, this optimistic outlook was by no means a guarantee of rising sales.

For the plastics makers realize that before their products will regain the heights of popularity they enjoyed a few years back, a battle for public goodwill must be won.

The hard facts are simply these: back in 1951, at least 80% of all toys shown at the Toy Fair were made of plastic. In contrast, two years later, thanks largely to a soured enthusiasm for "the brittle toys that frequently broke in the first five minutes of play," the picture had darkened to this extent: while metal toy sales were rising 20%, plastic toy sales dropped 40%.

Better Materials: The plastics makers have, of course, realized before now that in order to hold the toy market, they must observe two factors:

- Make a superior, particularly breakageproof, plastic available.
- Convince the toy manufacturers, and the toy buyers, that it's false economy to save a few pennies to make or buy cheap items. Said one leading toy maker: "A brittle plastic can't support the toy industry."

Materialwise, plastics makers have been undeniably successful. More than

a year ago, chief target of criticism, the styrenes, were beefed up to "five times tougher" than general-purpose polystyrene; recently, new, supertough styrenes, practically destructionproof, have become available.

And all the while, those "naturally tough" plastics, the acetates and butyrates, have continued to roll along in steady, if unimpressive, fashion. One major producer, Celanese, claims that while the plastic toy industry was suffering its drastic drop-off, its own sales for toy making has suffered only a 3% decline in the past year.

The reason for this contrast, according to Celanese: breakage and related complaints against the tough (but expensive) acetate are relatively rare.

Key to Future: With the raw material problem licked, the key factor in restoring plastic toys to favor lies in selling the value of quality. Big questions, of course, are to whom and how to sell. Celanese has been gnawing away at this tough nut for some time, believes its current campaign should go far to crack the shell of the toy makers and buyers.

The present Celanese promotion for quality toys is built around featuring tested (and approved) toys on an "Honor Roll." Up to its original closing date in December, the "Roll" of manufacturers producing high-quality items listed 22 manufacturers and re-

presented hundreds of items. More candidates for extra pages have subsequently been added.

Honor Building: Although Celanese has been promoting quality for the past six years, the Honor Roll idea germinated only after the 1953 slump.

The thought was born prematurely in February last year (too late for the Toy Fair) when several toy makers agreed with Celanese that "there isn't going to be any more plastic toy business unless something is done."

The general economic spring slump worsened the situation, discouraged the industry even further. But by June, Celanese, primed with a new set of plastics colors, started rolling.

Here's how the Honor Roll snowballed:

- **July.** With a general business upswing under way, customers began coming in with items to be exploited through the Honor Roll.

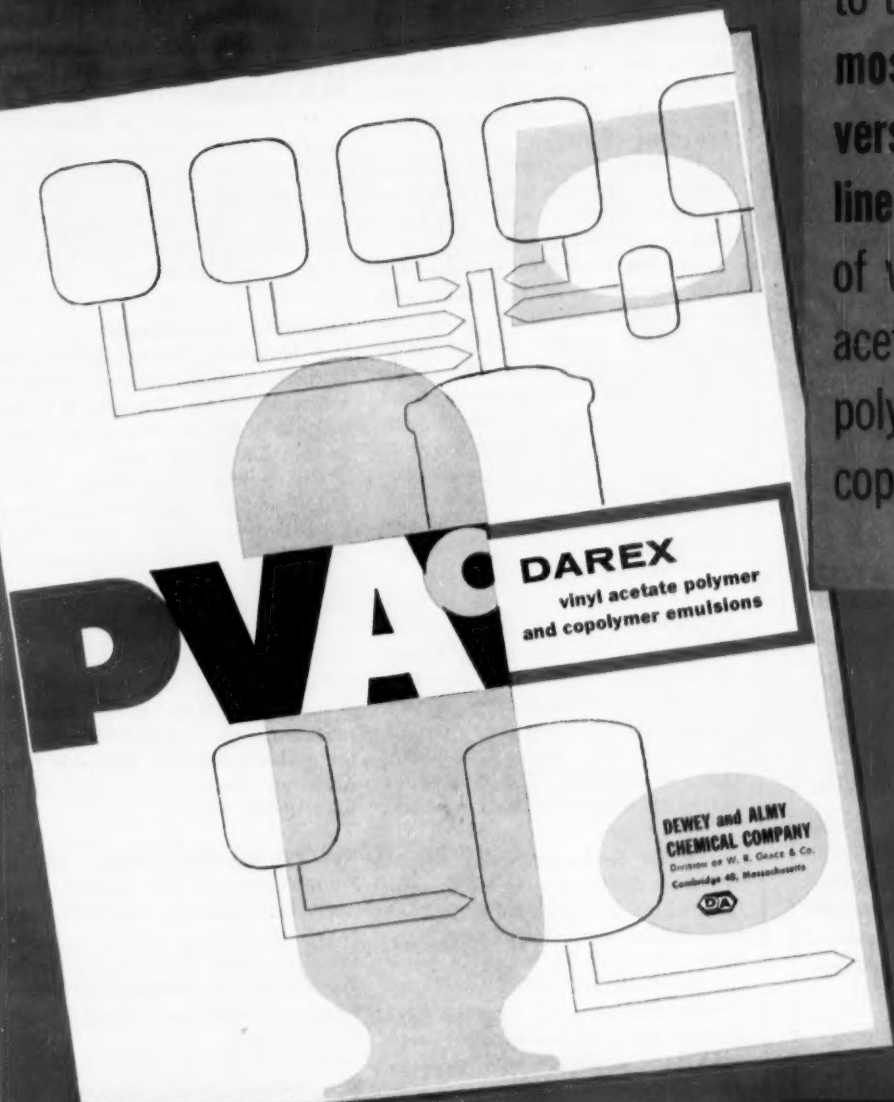
- **December 1.** The book, now swelled to hundreds of toys (all approved) was closed.

- **January 7.** With this book, salesmen, accompanied by their district managers (or a market development man), called on their favorite manufacturers and molders.

- **January 15.** A broad coverage Honor Roll mailing went to manufacturers not personally called upon.

- **February 1.** Market development men then approached the buyers. Fifty or sixty buying headquarters in the two important centers, New York and Chicago, were visited.

Your guide
to the
most
versatile
line
of vinyl
acetate
polymers and
copolymers



The broad line of polyvinyl acetate emulsions offered by Dewey and Almy includes four *standard* DAREX polyvinyl acetate polymers and four *special* copolymers with unusual qualities. Their properties, special features and typical end uses are described in this new brochure, No. E-12. Write for your copy today! It will help you to be sure that you are using the polyvinyl acetate emulsion best suited to your requirements.



DEWEY and ALMY Chemical Company

DIVISION OF W. R. GRACE & CO.
Cambridge 40, Massachusetts

SALES OFFICES:

62 Whittemore Ave., Cambridge 40, Mass.
6050 W. 51st St., Chicago 38, Illinois
1060 Broad St., Newark 5, New Jersey

West Coast:

Martin, Hoyt and Milne, Incorporated
Los Angeles, San Francisco, Seattle, Portland

**You gotta be
first...**



to be best!*

*25 years ago, Alloy Fabricators started to build Stainless Steel, Monel, Inconel, Nickel and Aluminum Process Equipment. With this experience, naturally, they're your best bet today!

**It's Still Our Only Business
— And We Mind It Well!**



**ALLOY
FABRICATORS**

DIVISION OF CONTINENTAL COPPER AND STEEL INDUSTRIES, INC.
PERTH AMBOY, NEW JERSEY

NEW...

P. A. S.

POTASSIUM ACID SACCHARATE

COOK

CHOH

CHOH

CHOH

CHOH

COOH

This mono-potassium salt of a polyhydroxy diacid offers vast opportunities in the manufacture of industrials and pharmaceuticals.

Because of the chelating properties exhibited on all types of metals, this material has found acceptance in the manufacture of metal cleaners & plating solutions. Also because of this sequestering feature, P.A.S. has found acceptance and di-esters all types of solutions containing fugitive metallic ions. It is stable over entire pH range.

P.A.S. finds use in the manufacture of mono cond diesters. It is excellent as an intermediate for the manufacture of detergents, dyestuffs and plasticizers.

P.A.S. has found wide acceptance in the pharmaceutical field, finding use in the manufacture of ferrous and cobalt salts, and also in the treating of radio-active contamination and metallic poisoning. Work has been done in the treatment of hypertension & enzyme stabilization. The low cost for this type product makes it exceedingly interesting.

Samples and information will be supplied on request.

SANDERS CHEMICAL CO.
2205 N. AMERICAN STREET
PHILADELPHIA 33, PA.

DISTRIBUTION

Commenting on the contacting of the buyers, an unusual step, director of molding sales, Richard Leiter, commented, "We believe that in order to do a thorough job of selling quality, we should try to enlist the buyers' sympathy. We are happy to report that in only one instance did a buyer feel we were assuming his responsibility. Most expressed their appreciation of our efforts."

To obtain more coverage, Celanese mailed the brochure to a large number of buyers, timed to reach them before they attended the Toy Fair.

No More Black Eye: Celanese, like their competitors in the plastics field, are hopeful that in the long run, quality will save the day for plastic toys. Maintaining that the fundamental struggle is not plastic vs plastic, but rather plastic vs nonplastic, synthetics suppliers foresee the day when none but a fly-by-night toy maker will produce, nor buyer purchase, those fragile, underdesigned playthings that have been giving the public a sour taste and the industry a black eye.

New TVA Product: Ammonium metaphosphate from the TVA's Muscle Shoals plant is now undergoing field evaluation. The chemical, a potential product for the government project, has a favorable nitrogen-phosphorus ratio: 17.3% N, 18.5% P, close to the unity ratio of some blended materials.

Ready for Reference: Feed supplements are discussed in an 8-p. booklet directed to the feed industry. New formulations applicable to animal nutrition are described. Nopco Chemical Co., Harrison, N.J.

• Isopropanol—15-p. booklet presents physical and physiological properties, specifications and shipping data. Carbide and Carbon Chemicals Corp., New York.

• Vinyl plastisol resin—22-p. booklet provides data on the properties, compounding and application of Opalon 410. Monsanto Chemical Co., Plastics Division, St. Louis.

• Chelating agents—technical bulletin providing physical, chemical, and application data on Perma Kleers. Refined Products Corp., Lyndhurst, N.J.

• Dibutyl fumarate is the subject of a technical bulletin (No. ODB-54-18). Properties and a bibliography of reactions of this resin and chemical intermediate, available in semicom-

mercial quantities, are included. Monsanto Chemical Co., Organic Chemicals Division, St. Louis.

• Color pastes for vinyl plastisols—technical bulletin (No. 140) includes table of colors, physical properties, uses, methods of application and prices. Claremont Pigment Dispersion Corp., Brooklyn.

• "The Analysis of Chloromethanes"—a new booklet presenting standard methods of analysis of these products. Offered, as technical service report No. 2.55, by Solvay Process Division, Allied Chemical & Dye Corp., New York City.

Distributor Appointments:

• Matheson, Coleman & Bell (East Rutherford, N.J.) has just appointed a new distributor, Krackeler & Campbell, Inc., for its reagent chemicals in the Albany, N.Y., area.

• Canadian Bronze Powder Works, Ltd. (Montreal) has been designated the Canadian vendor for Mearl Corp.'s (New York) synthetic pearl essence.

Bean Book: Of interest to paint and other manufacturers using soy products is the 1955 edition of the Soybean Blue Book. This 160-p. volume contains latest statistics, directories of processors, refiners and firms servicing the soybean industry. Available from American Soybean Assn., Hudson, Iowa. Price: \$3.

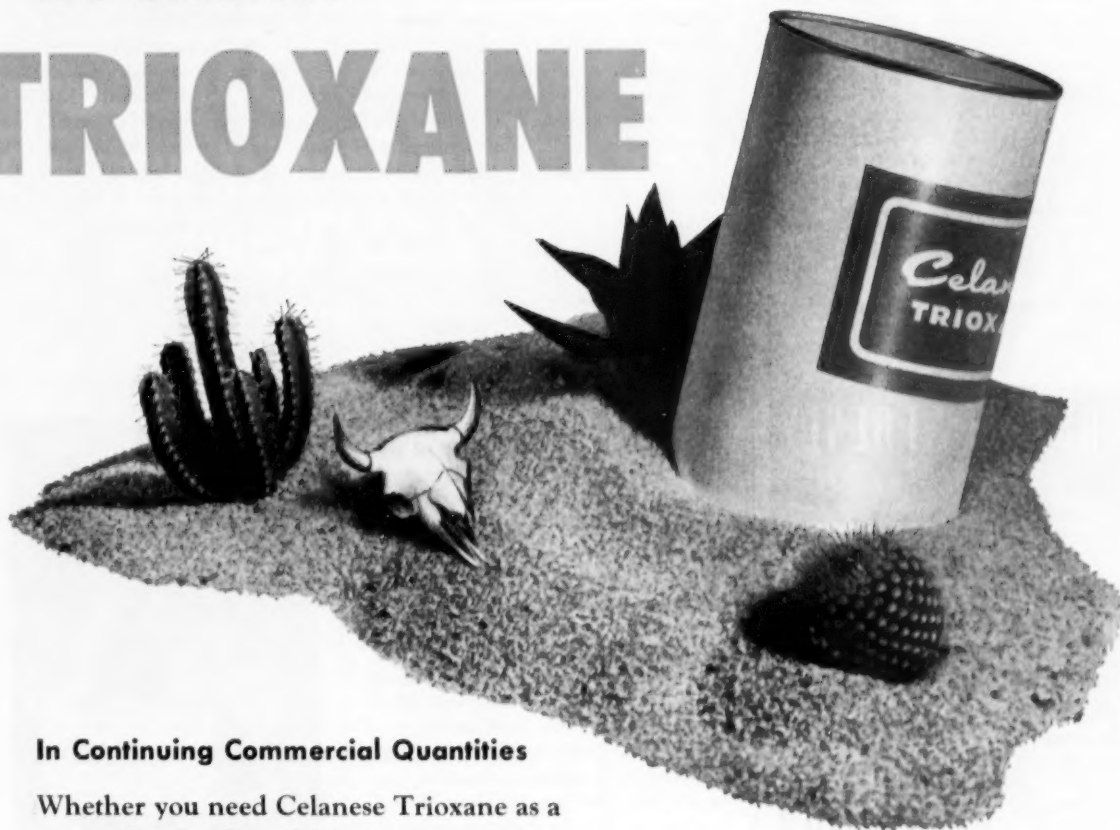
New Offering: Aluminum formate in crystalline form is now available from Aceto Chemical Co., Inc., (Flushing, N.Y.). Containing 30% equivalent alumina content and claimed to be free of aluminum chloride and sodium sulfate, the solid form affords reduced shipping costs.

Fire School: Ansul Chemical Co. (Marinette, Wis.), makers of dry-chemical fire-fighting equipment, has scheduled 12 three-day classes, beginning May 23-25, for instruction in the latest fire-fighting (with chemicals) techniques. Running to Sept. 19-21, courses are open to industrial plant safety personnel, fire marshals, municipal and military fire fighters and others in a first-come, first-served basis.

Disease Predictor: Bristol Laboratories is now mailing a weather forecasting and disease-trend service to physicians. Named The Bristol

formaldehyde isn't "formaldehyde" any more
for an anhydrous source
it's Celanese*

TRIOXANE



In Continuing Commercial Quantities

Whether you need Celanese Trioxane as a source for dry formaldehyde gas . . . as a stabilizer for trichloroethylene solutions . . . as an electroplating bath constituent . . . or as a component for the azeotropic separation of hydrocarbon mixtures, you're always assured of commercial quantities.

We'll be glad to help your development work with samples and technical guidance.

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Chemical Division, Dept. 652-C
180 Madison Avenue, New York 16.

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CHEMICALS

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Only Celanese offers the right formaldehyde for every purpose

PARAFORMALDEHYDE • FORMCEL® SOLUTIONS • FORMALIN • TRIOXANE

UNIVERSAL ADSORBENT

There is no other material known that will adsorb as many different compounds, under widely varying conditions, as ADSORBITE Activated Carbon.

ADSORBITE Activated Carbon is manufactured in a variety of adsorptive capacities, and is available in a wide range of particle sizes.

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Chemical Buyers' Week Guide

McGraw-Hill Publishing Company
330 West 42nd Street, New York 36, N. Y.

DISTRIBUTION

Weathervane, the 6-p. monthly, a part of the company's direct mail promotion, is claimed to be the first to recognize the importance to physicians of climatic effects on disease, give advance warning on what to anticipate in their local areas.

Poultry Pictures: Beamed at those interested in poultry management, three new films are now available from Lederle Labs., division of American Cyanamid Co. The films—"Respiratory Diseases in Poultry," "Intestinal Diseases in Poultry," "Tom Turkey, All American"—document common disease symptoms.

Distribution Centers: Nopco Chemical Co. has acquired a new warehouse and office in Portland, Ore.

• Oil & Chemical Terminal, Inc. is planning storage terminal facilities in Newark. Along the Passaic River, the operation is located to receive truck, rail and water shipments, is slated to start the second half of this year. Storage tanks of 4-million gal. capacity will be rented for terminal purposes, as well as for the company's own operations. Drumming and canning facilities will also be available. Oil & Chemical Products, Inc. (New York City), associated with O&CT, will manufacture at the Newark site. Likewise, Chemo Puro Manufacturing Corp. (Long Island City) will move its plant to the new location.

• Olin Mathieson Chemical Corp. will lease an under-construction factory building on the Allegheny River, near Pittsburgh, for the storage, packaging and distribution of auto anti-freeze and related products. The 70,000-sq.-ft. plant, plus a tank farm for bulk storage, will be operated by Penn-Glenn Oil Works under Olin Mathieson's direction.

Delaware Dynamite Law: Explosives transportation in Delaware may become more controlled. The state legislature has received a bill calling for a 5000-lb. limit on the quantity per trailer-truck traveling state roads. Trucks would be compelled to carry at least two fire extinguishers and violators would face \$150 to \$500 fines or up to a year in prison. In national emergencies or wartime, the law would not apply.

Sales Switches: Argus Chemical Corp.

(Brooklyn) has opened offices in Cleveland to service Midwest accounts.

• The Texas Co. has set up a Liquefied Petroleum Gas Division to sell butane and propane east of the Rockies.

• Monsanto Chemical Co.'s Inorganic Chemicals Division has formed a special sales section for phosphate and surfactant products. Purpose: to coordinate sales and production.

• Pacific Coast Borax Co., division of Borax Consolidated, Ltd., has opened a district sales office in Kansas City, Mo. The new office will represent the package, agricultural and industrial sales divisions of the company.

• Atlas Powder Co. is transferring its Darco activated carbons sales headquarters from New York City to Wilmington, Del. Holmes Fornwalt is the new Darco sales manager.



It's a Snap Now

A QUICK FLIP of the wrist is all that's needed to open this new multiwall bag, now offered to chemical and fertilizer users and others. Tabled the Snap-Open Sack, the bag, claims maker Hudson Pulp & Paper Corp., can be opened with a sharp upward jerk, or partly opened to any point convenient for controlling spout pouring.

NEW REVENUES

from by-product gases and fluid flows?

LOW-TEMPERATURE PROCESSING

can realize potential profits

LOW-TEMPERATURE liquefaction and separation of gases causes many waste gases and fluid flows to yield valuable products. This interesting technology, in fact, reveals bright new horizons of profit for the chemical, petroleum, steel and other process industries. By its means not only is it practicable to recover useful elements that cannot be reclaimed otherwise, but even where other methods are feasible, a low-temperature system often does a superior recovery process.

Air Products, Incorporated, has been prominent in this field for many years. The company has designed and built more than 700 low-temperature gas separation plants for many of the largest companies in the world. Over 100 graduate engineers employed full-time by this company, are at your service. They will study your possibilities for using low-temperature processing profitably, providing a preliminary engineering analysis or a complete process design. Send us an outline of your problem—there is no charge for preliminary consultation. *Air Products, Inc., Dept. J, Box 538, Allentown, Pa.*

EXAMPLE: Hydrocarbon Separation from Refinery and Coke Oven Gases

Ammonia
Synthesis
Gas

OXYGEN
NITROGEN
HYDROGEN

Methane

Oxygen

Carbon
Monoxide

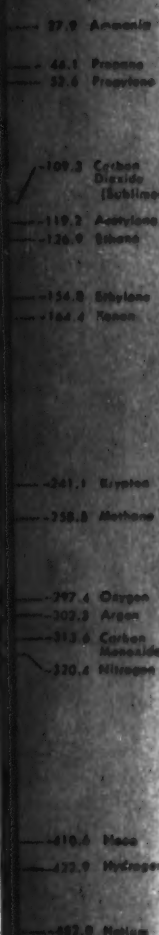
Nitrogen

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Boiling Points, Fahrenheit



36-page BROCHURE explores the broad possibilities of low-temperature processing. Write for a free copy.

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INCORPORATED

Specialists in Low-Temperature Processing

Cost Analyses

Process Design

Apparatus Design

Apparatus Manufacture



TOTAL DESTRUCTION
to 4½ miles

HEAVY TO MODERATE DAMAGE
to 10 miles

could minimize damage, speed recovery...

After the Fall-Out Is Over

Recent disclosures of the destruction potential of thermonuclear weapons is a potent argument for defense preparedness. But what has the chemical process industry done in the way of defense planning against the possibility of a nuclear attack?

That's the question put to companies all over the country in a CW survey completed this week. The answer: industrial interest in defense preparation ranges all the way from serious active planning to downright lethargy. And the preponderance of those taking the latter view suggests that the chemical industry is dragging its feet, lags two years behind many other industries.

Though unpreparedness is by no means confined exclusively to the smaller companies, it is more prevalent in this group than it is among the larger, multiplant organizations. Perhaps this is due to the latter's customary attention to thorough (though sometimes cumbersome) long-range planning required to coordinate widespread operations. But defense is of

equal, if not greater, importance to the small company, for it stands to take a relatively greater loss if its single plant should happen to be in a bomb damage area.

Defense Goals: For the most part, neglectful planners fall into two general categories: the head-in-the-sand thinkers, who discount the danger as only a remote possibility, and the pessimists, whose "What defense is there?" implies resignation to the futility of preparation. But the Defense Dept. points out that there is much that plants can do to protect personnel, minimize damage to facilities, and restore essential productive capacity as soon as possible after an attack.

The best protection for personnel in critical target areas is evacuation. Plants remote from likely target centers should consider shelters that would furnish suitable protection against both the shock wave of a blast and the subsequent radioactive fall-out. Once such measures have been mapped out, test drills should be con-

ducted to familiarize the workers with the best procedure to follow and impress on them the importance of taking cover. In World War II, over half of the German industrial casualties resulted from the early raids before workers were accustomed to taking cover at the first air raid alarm.

The most effective protection for plant buildings and processing equipment is dispersal to widely separated sites, preferably in nontarget areas. Dispersal is not practical in the case of many interdependent operations. But remote locations should be seriously considered for units that can function more or less independently.

Fires started by the intense heat of a thermonuclear reaction may well cause more destruction than the blast itself. But plants beyond the range of the heat wave may survive, provided that adequate preventive measures are taken to eliminate fires that could start in combustible products and raw materials. Well-equipped fire-fighting groups should be organ-

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ized to combat such outbreaks in areas that are not untenable because of radioactivity.

Production Recovery: The planning phase most neglected by chemical plants is that pointed toward restoration of damaged production facilities after an attack. Even those companies that have been quite progressive in establishing other defensive programs contemplate no extensive recovery planning "unless the situation worsens."

Most plants would resume at least partial production provided that the necessary equipment was undamaged or repairable. But very few have definite plans for auxiliary water, gas and electric supplies. And the loss of an electric generating plant or reservoir (both high-priority targets) could hamstring plants that were otherwise unaffected by an attack.

Processing equipment in the chemical industry is heavy, but easily damaged. In many plants, as much as 95% of the facilities may be located

outside of buildings. Since the chances of damage are greatly increased by such vulnerability, efficient restoration would depend largely on foresighted stock piling of vital spare parts, planning of alternate production methods.

Area Factor: Though in the minority, several chemical plants, both large and small, have instituted constructive preparedness programs. By and large, these instances of industrial participation are the result of well-organized Civil Defense programs in the communities where the plants are located.

Chemical plants in the Detroit area, for example, are cooperating with that city's CD mutual aid program. Organized "flying squads" in the various plants stand ready to lend a hand with fire fighting, rescue, other disaster work. And area-wide evacuation plans have been mapped out to remove personnel to safer locations.

Other areas in which chemical plants have made progress in defense preparation are the petroleum producing sections—particularly in California

and Texas. Petroleum processing plants are leading most other industries in defense planning, perhaps owing to their prominent role in the national defense structure.

Typical of the petroleum industry's outlook is the view expressed by Standard Oil of Indiana: "While we hope that such an attack will never come, prudence dictates that we take precautions." As a result of such thinking, the firm has taken steps that have not been unduly expensive, some of which even offer collateral advantages. Important corporate records are microfilmed and stored in remote locations; warehouse space has been rented for possible emergency use as an alternate office headquarters; detailed plans have been mapped out for staffing emergency office and operations.

Other actions taken by Indiana Standard for operational reasons: location of new plants in relatively non-strategic areas; construction of product pipelines to interconnect four

Even in plants on the fringe of a blast, chemical production could be completely shut down by bomb damage to critical equipment. Restoring lost facilities with purchased replacements could take a year or longer. Here are a few suggestions on how you can prepare for speedier recovery:

| Functional Area | Purchase of replacements for these critical components . . . | would normally require (months) | but only (months) if you . . . |
|-----------------|--|---------------------------------|--------------------------------|
| Electric power | Switchgear, rectifiers, transformers | 14-15 | 1-3 |
| Water | Pumps, electric motors | 6-13 | |
| Steam | Boilers | 4-14 | 2-3 |
| Storage | Tanks | 7-13 | 0-4 |
| Instruments | — | 4-6 | 0-1 |
| Cooling | Blowers, preheaters, atmospheric coolers | 8-11 | 1-2 |
| Electrolysis | Heaters, stoneware, aluminum towers, battery tanks, anodes, cathodes | 20 | 12 |
| Absorption | Acid towers, scrubbers, dryers, rubber-lined tanks and pipe | 5-13 | 1-6 |
| Reaction | Kilns, vacuum dryers, glass-lined tanks, hydraulic pumps, reaction furnace | 3-11 | 1-11 |
| Extraction | Extractors | 6-13 | 6 |
| Conversion | Converters | 6-13 | 6 |
| Distillation | Condensers, heat exchangers, pumps | 14 | 10 |
| Chlorination | Heat exchangers, ammonia refrigeration | 12 | 9 |
| Neutralization | Rubber-lined tanks and pipe, valves | 11 | 5 |

Stock spare equipment; use diesels for power, motor-generator sets, "package" boilers; lay temporary water supply above ground, tie in to neighboring supply

Use tank cars, install groups of small standard-size tanks

Stock spares, use manual control

Stock spare prefabricated duct-work to be used in bypassing operations; stock spare parts and salvage spares from damaged equipment; study possibilities of alternate linings in glass- and rubber-lined tanks; stockpile essential materials; dispose of by-products; subcontract with outside processors

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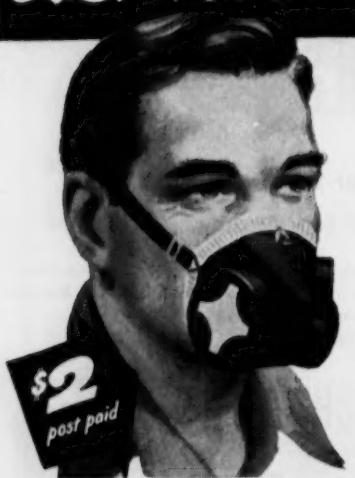
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PRODUCTION

inland refineries and main markets to prevent interruption of supply; and greater decentralization of supervisory activity in all branches.

Works Both Ways: Community complacency about CD is just as contagious as civic enthusiasm. In Atlanta, Ga., for instance, there is a tendency to discount the danger implied by that city's "critical target" designation because of its remote location from Gulf and Atlantic Coasts and from international boundaries. As a result, chemical companies in the area have done little. No over-all evacuation plans have been laid; plant preparations, for the most part, have been limited to beefed-up first-aid programs.

A popular school of thought rationalizes such an attitude as being essentially "optimistic." But according to Webster, the classical, philosophical definition of an optimist is one who looks on this as the best of all possible worlds. For anyone who seriously believes that today, the same dictionary has a more apt word: schizophrenic—one who suffers "loss of contact with the environment."

Safety First

Though it may be lagging behind on long-range disaster planning, the chemical industry continues to take an aggressive attitude toward the problem of maintaining safety in day-to-day plant operations. Last week, as two of the giants in the industry posted enviable records, small firms got two assists, one from the government and one from the National Safety Council:

- Du Pont figures, just compiled, show that 1954 was the best year yet for the firm, as far as freedom from industrial accidents was concerned. Its injury frequency rate of 0.33 (injuries per million man-hours worked) was 40% better than the previous year's. As Du Pont sees it, this means that because of its safety program, between 750 and 1250 accidents that would have happened, didn't.

- The Niagara Falls plant of Carbide and Carbon Chemicals logged 365 consecutive days without a lost-time injury, received the parent corporation's bronze plaque award for the performance.

- The government has reprinted the proceedings of the President's

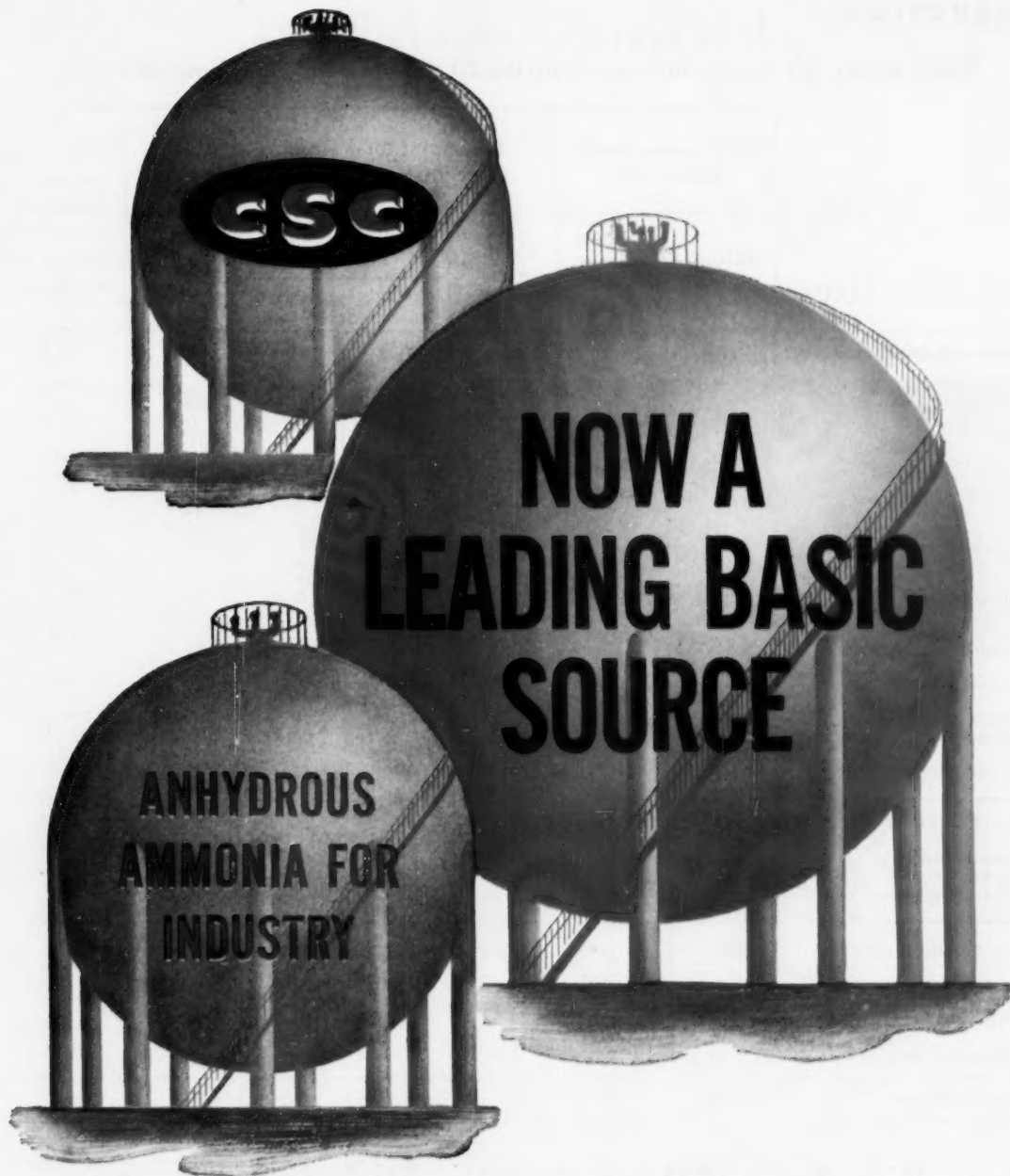
Conference on Occupational Safety, held in Washington last year, under the title "Guide to Community Safety Programs." The booklet makes the point that some communities have already done outstanding jobs on promoting safety. For those that haven't, it suggests a one-day program for starting a community effort.

- The National Safety Council is offering king-size banners for getting across safety slogans to the employees. Available on an annual subscription basis, the banners measure 10x3½ ft., come in two styles—one for out-of-doors, one for indoor display. The subscription covers 12 banners, one to be shipped each month.



Pedigreed Bolts

NEITHER GOLD nor platinum but titanium is the material for these bolts that H. Thomas Hollowell, president of Standard Pressed Steel (Jenkintown, Pa.) is showing. His firm has just tooled up for large-scale production of the fasteners, tagged Hi-Ti bolts. They're being aimed at the aircraft industry because of titanium's light weight. But Hollowell thinks the process industry's interest will be more than academic: the bolts were made practical by overcoming titanium's poor performance under fatigue. Hollowell feels that this work will pave the way for other items of titanium equipment.



With the completion of the \$20,000,000 expansion program at Sterlington, La., CSC is producing anhydrous ammonia at double its former capacity. It establishes CSC as a leading, basic source of ammonia for the chemical industries and assures you of a dependable source of supply of anhydrous ammonia on a year-round basis.

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**INDUSTRIAL
CHEMICALS**

March 26, 1955 • Chemical Week

77

Water intake for establishments reporting 20 million or more gallons of water

| | Total water intake during 1953 | | Percent of total fresh water intake, by source | | | Brackish water intake as percent of total | Water intake by establishments recirculating water as percent of total |
|---------------------------------|--------------------------------|------------------------------|--|-----------------------|--------------|---|--|
| | Billion gallons | Million gallons per employee | Public water systems | Company water systems | | | |
| | | | | Surface water | Ground water | | |
| Chemical and Allied Products .. | 2784 | 5.87 | 7.4 | 71.2 | 21.4 | 34.3 | 50.3 |
| Industrial inorganics..... | 783 | 11.98 | 7.7 | 59.4 | 32.9 | 14.1 | 42.6 |
| Alkalies and chlorine..... | 372 | 17.34 | 8.5 | 66.7 | 24.8 | 18.0 | 33.8 |
| Inorganics (n.e.c.)..... | 412 | 9.36 | 7.0 | 53.3 | 39.7 | 10.5 | 50.6 |
| Plastic materials..... | 91 | 2.74 | 15.4 | 64.9 | 19.7 | 47.9 | 55.8 |
| Synthetic rubber..... | 30 | 3.18 | 12.6 | 81.2 | 6.2 | — | — |
| Synthetic fibers..... | 197 | 2.78 | 2.7 | 92.6 | 4.7 | 7.6 | 75.1 |
| Organics (n.e.c.)..... | 1338 | 13.93 | 3.9 | 84.1 | 12.0 | 53.1 | 52.7 |
| Drugs and medicines..... | 28 | 0.54 | 27.5 | 42.2 | 30.3 | 7.9 | 32.4 |
| Medicinal chemicals..... | — | 0.82 | 26.2 | 46.1 | 27.7 | 0.1 | 32.5 |
| Pharmaceutical preparations | 15 | 0.41 | 26.6 | 39.8 | 33.6 | 14.0 | 33.1 |
| Soap and related products..... | 22 | 0.87 | 55.4 | 13.2 | 31.4 | 45.6 | 51.6 |
| Soap and glycerine..... | 18 | 0.87 | 60.0 | 15.8 | 24.2 | 45.0 | 51.5 |
| Inorganic color pigments..... | 44 | 4.09 | 12.8 | 72.2 | 15.0 | 46.8 | 92.2 |
| Gum and wood chemicals..... | 32 | 5.63 | 25.9 | 22.4 | 51.7 | 0.1 | 55.7 |
| Soybean oil mills..... | 3 | 1.0 | 34.8 | 7.1 | 58.1 | 7.8 | 38.4 |
| Fatty acids..... | 3 | 1.76 | 13.1 | 52.6 | 34.3 | 11.0 | 98.1 |
| Glue and gelatin..... | 7 | 2.75 | 18.5 | 46.6 | 34.9 | 1.3 | 41.7 |
| Petroleum and Coal Products .. | 1923 | 9.85 | 31.6 | 60.0 | 8.4 | 36.6 | 57.5 |
| Petroleum refining..... | 1603 | 10.55 | 37.9 | 52.3 | 9.8 | 41.1 | 56.4 |
| Coke and by-products..... | 313 | 8.93 | 8.9 | 88.0 | 3.1 | 14.2 | 62.7 |
| By-product coke ovens..... | 312 | 9.25 | 8.7 | 88.2 | 3.1 | 14.2 | 62.9 |
| Paper and Allied Products | 1256 | 5.20 | 13.1 | 65.9 | 21.0 | 13.8 | 74.6 |
| Pulp, paper and paperboard..... | 1231 | 6.41 | 12.9 | 65.9 | 21.2 | 14.1 | 75.1 |
| Pulp mills..... | 635 | 12.20 | 16.2 | 63.1 | 20.7 | 15.3 | 72.9 |
| Paper and board mills..... | 575 | 4.41 | 9.5 | 68.4 | 22.1 | 12.9 | 77.7 |
| Paper coating and glazing..... | 9 | 0.52 | 5.6 | 69.6 | 24.8 | — | 35.4 |
| Total, All Industries | 11430 | 1.50 | 19.8 | 66.7 | 13.5 | 21.3 | 52.6 |

How Big Is a Chemical's Thirst?

The man running a chemical plant doesn't have to look at the figures above to know that his operation takes a lot of water. What he can find out is that he's in good company: U.S. industry in 1953 had a gigantic thirst, which it slaked with 11.4 trillion gal. of water. And three prominent members of the process industry accounted for 52% of the total.

Just compiled by the Bureau of Census, the figures are the result of a survey of all industrial plants using 20 million gal. or more of water yearly.

These establishments, the bureau estimates, represent consumption for between 90 and 95% of all the water used by all industry.

Attesting to the size of the chemical industry's water problem is the fact that firms listed in the government's broad category of "Chemicals and Allied Products" consumed 2784 trillion gal. (24% of the total) and half of this water was consumed in plants that recirculate over 5% of their intake.

Also indicative of a growing water

problem is the fact that just over one-third of the water consumed in chemical plants was brackish. This figure, however, is heavily weighted by water-shy chemical consumers in Texas: the state's chemical companies, largest users of water in the whole industry, required 752 million gal. in 1953. And 82.9% of it was brackish. Similarly, Texan petroleum and coal processors used 321 million gal., 65.3 of which was brackish.

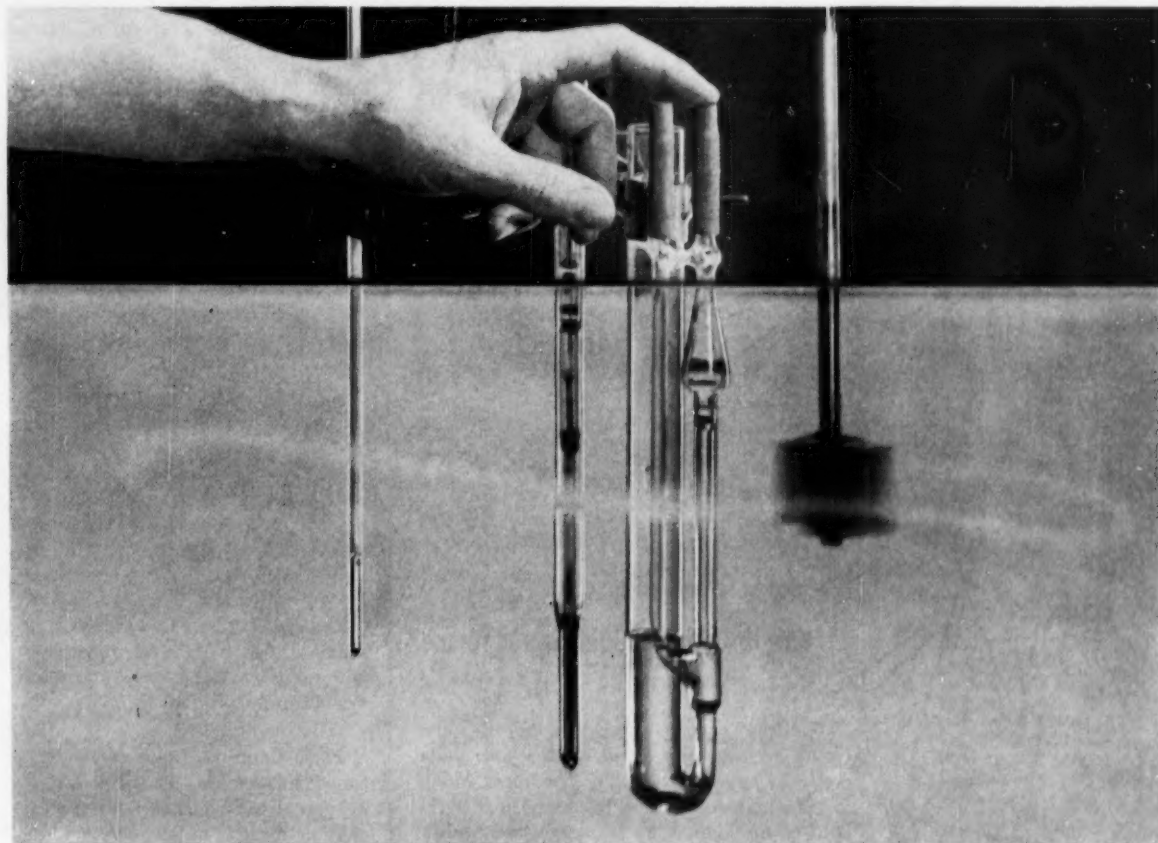
Both are higher than the averages for the two industries.

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PRODUCTION

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Canned Agitation: Totally enclosed rotors of the type employed in canned pumps (CW, Feb. 6, '54, p. 64) are now used for pressure-vessel agitators manufactured by Pressure Products Industries, Inc. (Hatboro, Pa.). Elimination of stuffing boxes and other rotary seals prevents leakage and contamination of products processed at high pressures. Canned agitators of 316 stainless steel are available with capacities ranging from 250 ml. to 25 gal., for pressures to 10,000 psi.

Fireproof Roofing: Developed by Lexsuco, Inc. (Cleveland), a new roofing method employs Owens Corning Fiberglas to eliminate combustible bitumen from roof deck covering. Fastened to the deck with a cold, non-combustible adhesive, the Fiberglas is covered with conventional roofing felt and gravel. Where a vapor barrier is required, a layer of Koroseal is first applied to the deck using the same cold adhesive or clips.

Compact Valve: A small cylinder replaces the conventional diaphragm top on Type E 360 two-pressure operating valves engineered by Emmet Machine & Mfg., Inc. (Akron, O.). The improved, compact design was made possible, says Emmet, through the use of low-friction Teflon hydraulic seals. Available in 1- to 3-in. sizes, the valves operate on 30 to 50 psi. air pressure, water or oil at pressures to 100 psi., to control hydraulic pressures to 3000 psi.

Nuclear Control: Leeds & Northrup Co. (Philadelphia) claims a first for its complete "package" systems, including design, instrumentation, and fabrication, for control of nuclear reactors. The use of standard L&N components is said to provide the qualities necessary for accurate control of research or power reactors without elaborate customizing.

Temperature Control: For regulation of ovens, furnaces, and electrical machinery in response to small temperature changes, Technical Equipment Co. (Berkeley, Calif.) now offers its Electron-O-Therm controller. Employing resistance thermometer-precision bridge circuits, three models cover temperature ranges from -100

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Pressure Control: Consolidated Engineering Corp. (Pasadena, Calif.) has developed two resistance-type pressure pickups for measuring transient high pressures in gases and liquids in chemical and petroleum work. Pickups are available in corrosion-resistant cases for threaded or flange-type mounting, in 1000 to 5000 psi. gauge and absolute ranges.

Portable Tank: A pipeline on wheels—that's how Heil Process Equipment Corp. (Cleveland) describes its new portable storage-transfer tank. Designed for capacities of 200 gal. and up, units are furnished with a variety of corrosion-resistant coatings or sheet linings, on skid or caster mountings.

Spray-cooled Condenser: A reverse-direction air stream principle, employed by Niagara Blower Co. (New York) in its new 200-ton refrigeration capacity ammonia condenser, increases capacity while reducing power requirements. Cooling by evaporation of sprayed water from the surface of condensing coils is said to require less than 5% of the water used by submerged-coil condensers of the same capacity. Added features: Niagara "Duo-Pass" and "Oil-Out" remove superheat and oil vapors from the refrigerant before it enters the condenser section.

Tubular Filter: The special honeycomb construction used in Lea Mfg. Co.'s cLEAN-FLO portable filters is designed to eliminate need of filter aids, minimize clogging effect. Two models are offered for handling 100 to 150 or 500 to 1000 gal. of activated carbon-treated alkaline solution. A blinking light automatically signals need for filter tube replacement when back pressure builds up to 50 psi.

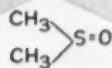
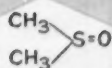
Even Flow: Aldrich Pump Co. (Allentown, Pa.) uses nine reciprocating plungers to minimize discharge variation in its new positive displacement Nonuplex direct flow pumps. Six interchangeable fluid ends and 20 plunger diameters from 2 to 5¼ in. provide flexible capacities.

Corrosion Seal: To adapt its Type 20 stainless alloy centrifugal pump to

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Dimethyl Sulfoxide, now available in pilot plant quantities, is a clear, water-white, very hygroscopic and completely water soluble liquid. It is believed to be non-toxic, has practically no odor, and only a slightly bitter taste. Despite being water soluble it dissolves many organic com-

pounds and is unusually selective in its solubility characteristics for hydrocarbons. Also of particular interest are the high boiling point, high flash point, and the low freezing point, (in eutectic mixtures with water) of Dimethyl Sulfoxide. Listed below are a few of its potential uses.

Potential uses

- ◆ **Solvent for acetylene** . . . absorbs 32% more acetylene than acetone . . . 3 times longer life in acetylene cylinders.
- ◆ **Selective separation of paraffinic and aromatic hydrocarbon mixtures.** Also for desulphurization of gasolines.
- ◆ **Solvent for certain synthetic fibres** such as polyacrylonitrile and acetate rayon as well as others.
- ◆ **As anti-freeze or hydraulic fluid** when mixed with water. (Offers possible cost savings.)
- ◆ **As paint and varnish remover.** Also nail polish remover.
- ◆ **Possibly useful as diesel fuel additive.** (Raises cetane number.)

Physical Properties

Dimethyl Sulfoxide

| | | | | | |
|--|-----------------------------|-----|-----|-------|-------|
| Molecular weight | 78 | | | | |
| Melting point | 18.45°C (supercools easily) | | | | |
| Boiling point (760 mm) | 189°C | | | | |
| Spec. gravity (20°C) | 1.100 | | | | |
| Refractive index (n _D ²¹) | 1.4787 | | | | |
| Vapor pressure | at | 20° | 30° | 47.4° | 56.6° |
| | mm | .37 | .79 | 2.82 | 5.11 |
| Viscosity 27°C | 1.1 cps | | | | |
| Specific heat | .5 cal/g as solid | | | | |
| | .7 cal/g as liquid | | | | |
| Heat of vaporization | ca 175 cal/g | | | | |
| Heat of solution | 60 cal/g | | | | |
| Heat of fusion | 20 cal/g | | | | |
| Heat of combustion | 6050 cal/g | | | | |
| Flash point (°C) | 95° (open cup) | | | | |
| Coefficient of expansion | .00088 | | | | |
| Dielectric constant | 45 | | | | |

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PRODUCTION

corrosive liquid and slurry handling, Eco Engineering Co. (Newark, N.J.) has developed a new Teflon-ceramic seal. Suction port design keeps the seal under reduced pressure, prevents foreign matter from working into it. Pump delivers 25 gpm. at heads to 55 ft., is furnished with solid or open Pyrex glass window face plate.

Tank Scrubber: A high-pressure hydraulic jet cleaning device to replace hand cleaning of tanks has just been placed on the market by Sellers Injector Corp. (Philadelphia). Dubbed Rotor Jet, the portable unit is powered by a venturi-injector to deliver powerful streams that clean by scrubbing rather than by cascade action. Jets are rotated pneumatically around both horizontal and vertical axes for complete coverage of tank interiors.

Sellers has three models available with discharge capacities ranging from 600 to 6000 gal./hour.



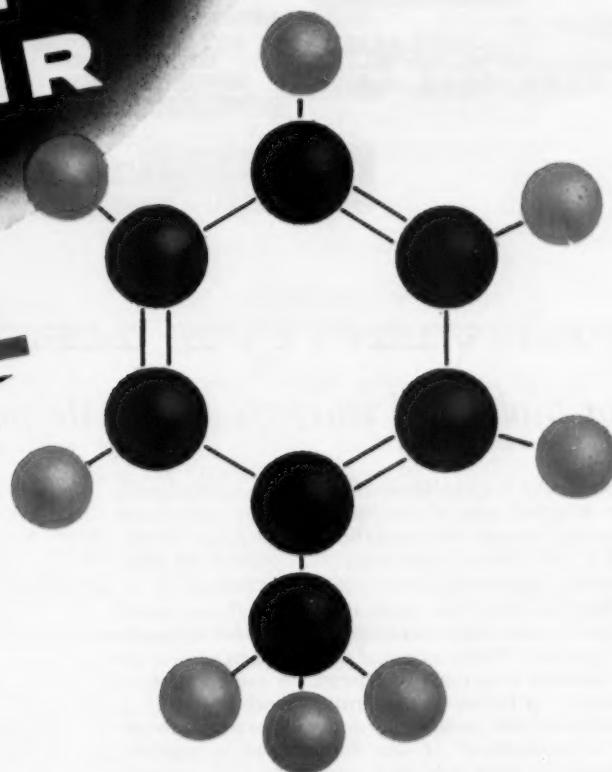
Easy as α β γ

ANY OF FOUR types of radiation from radioactive materials used in industrial production studies can be monitored by the lightweight portable probe developed by General Electric Co. (Schenectady, N.Y.). Alpha, beta, gamma, and thermal-neutron radiation are detected by selective phosphors in interchangeable caps, counted by fast-acting scintillation counter.

now from
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TOLUOL
XYLOL

and



Heavy Aromatic Solvents

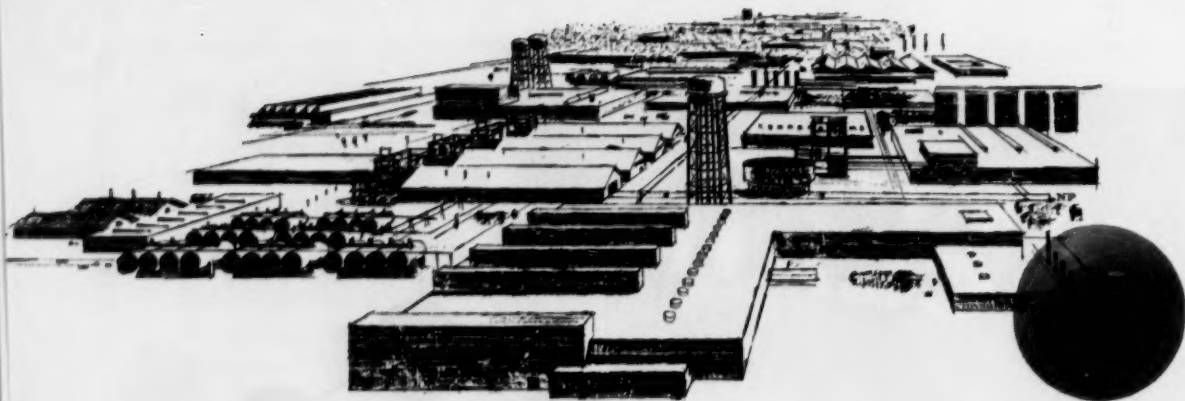
● Designed especially for quantity production of high purity aromatic hydrocarbons, including toluol, xylol and heavy aromatic solvents, the newest of Sinclair's chemical units is now being completed at Marcus Hook, Pa.

This new unit, which will provide a dependable supply of petro-chemicals for industry, will be in full production in March, 1955. Its operation marks another step forward in Sinclair's progress in the petro-chemical field.

If your manufacturing processes call for toluol, xylol or other aromatic hydrocarbons and solvents, be sure to investigate this new source of supply. Write or call —

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(Subsidiary of Sinclair Oil Corporation)
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PREVENTIVE MEDICINE

for biological warfare...and its peacetime application

It was early in 1954. Blaw-Knox under contract with the Army Corps of Engineers, quietly completed construction and test operation of the Army Chemical Corps' top priority facility . . . the Pine Bluff Arsenal "production development laboratory."

Here is one of the most complex and top secret projects since the development of the atom bomb. Its purpose? Production and development of biological warfare munitions to strengthen our retaliatory capacity in hopes of preventing another war . . . creation of new antibiotics and vaccines to increase the effectiveness of our immunization against diseases in both war and peacetime . . . experimentation with new means and facilities for detection of diseases and rendering them impotent . . . and accomplishment of these objectives without endangering the plant workers or community.

Although information about this facility's operation and production remains highly classified, the story of Blaw-Knox participation now can be told in part.

The Pine Bluff project was a unique experience for the Army Chemical Corps as well as Blaw-Knox. It involved design and construction of special equipment for which no prototypes existed . . . the most exacting leak tests known . . . unusually close mechanical and structural tolerances . . . accurately and automatically controlled temperatures, humidity, ventilation and process cycles. Over a third of its multi-million dollar cost was devoted to an elaborate system of safety devices. In addition to performing all engineering, procurement and complete erection, Blaw-Knox collaborated in initial start-up and testing of this extensive, first-of-its-kind facility.

Our selection for this important project illustrates the faith placed in Blaw-Knox engineering and construction skills, ingenuity and ability to work as a part of the team. When you are in need of a realistic solution to a processing problem and completion of a project on time and within the budget, call upon Blaw-Knox.

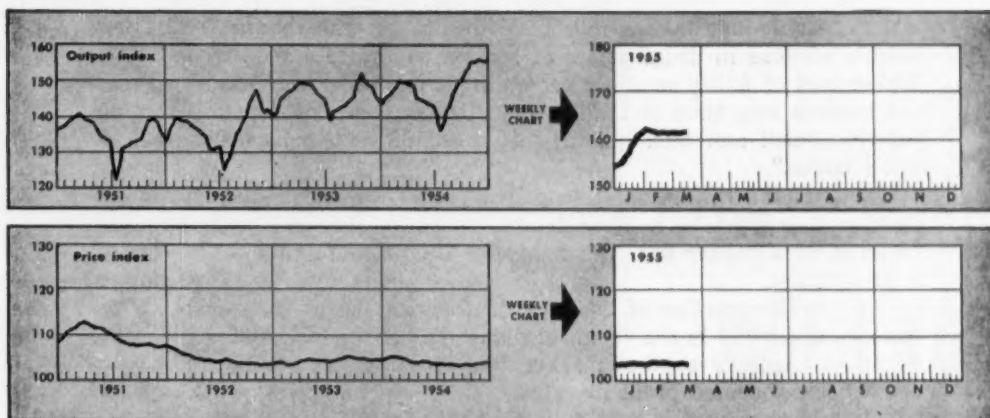
BLAW-KNOX COMPANY



Chemical Plants Division / Pittsburgh 22, Pennsylvania
Tulsa 1, Oklahoma/Chicago 1, Illinois/Washington 5, D.C.



MARKETS



WEEKLY BUSINESS INDICATORS

| | Latest Week | Preceding Week | Year Ago |
|--|-------------|----------------|----------|
| CHEMICAL WEEK Output Index (1947-49=100) | 161.9 | 161.5 | 149.8 |
| CHEMICAL WEEK Wholesale Price Index (1947=100) | 103.9 | 104.0 | 104.3 |
| Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.) | 367.1 | 372.2 | 273.2 |

MONTHLY INDICATORS—Trade (Million Dollars)

| | MANUFACTURERS' SALES | | | MANUFACTURERS' INVENTORIES | | |
|-------------------------------|----------------------|-----------------|----------|----------------------------|-----------------|----------|
| | Latest Month | Preceding Month | Year Ago | Latest Month | Preceding Month | Year Ago |
| All Manufacturing | \$24,857 | \$24,837 | \$23,902 | \$43,645 | \$43,748 | \$46,382 |
| Chemicals and allied products | 1,779 | 1,812 | 1,569 | 3,026 | 3,063 | 3,067 |
| Petroleum and coal products | 2,207 | 2,264 | 2,149 | 2,587 | 2,639 | 2,697 |

MARKET LETTER

In the nation's titanium arena, next Thursday (March 31) may well be a day of considerable import. For then the long-drawn-out negotiations between the government and Du Pont—concerning construction of a new 7500-ton/year plant near Waverly, Tenn. (*CW*, Dec. 18, '54, p. 106)—will take one of three significant turns:

- A contract will finally be signed that would lift scheduled U.S. titanium capacity up to 30,000 tons by 1958, and make Du Pont the country's top producer;
- General Services Administration will reimburse Du Pont for money the company has spent thus far on design and engineering work for the proposed installation—and then call off the whole deal;
- An agreement will be reached to extend—for the fourth time—the negotiation deadline.

Actually, it was thought more than a year ago, that a contract with Du Pont would be signed when arrangements were also made with Electro Met (division of Union Carbide), and Dow Chemical. One stumbling block in the path of the Du Pont signing: the new contract would give the company a market preponderance.

Formal antitrust clearance from the Dept. of Justice, however, would remove any consequence of that obstacle. Whether such Justice approval—as well as Office of Defense Mobilization okay—can be given in the few days remaining is moot. But the attempt will be made. Some senators last week were asking the pertinent question: when is GSA going to conclude that contract?

MARKET LETTER

It doesn't take a fine sieve to sift out the reason behind last week's advance in drum prices of sodium salicylate and salicylic acid—higher cost of filling small-lot orders. Says one seller to *CW*: "It's taken the trade a long time to realize that obvious fact; the new differentials between small and bulk quantity sales should help balance long-out-of-kilter books."

That's why most—though not yet all—salicylic acid makers are now quoting crystals, in fiber drums, up 3¢/lb. (to 51¢), and powdered material at a higher 58¢. Drum tag on USP sodium salicylate: 71¢/lb., a 3¢ increase.

(The practice of boosting drum prices hasn't yet taken on the aspects of a trend in the chemical industry, but it could, and easily. Producers, in today's buyers' market, are scouting every angle to fatten competition-squeezed profit margins.)

It seems a fair-to-middling bet that acetylsalicylic acid (aspirin) prices will not be affected by the raw material changes so soon after December's 5-10% hikes.

•

Whether or not an analgesic will be needed by glycerine traders is a matter for conjecture. Here are some factors observers are pondering:

- Glycerine, both crude and refined, is tight at the moment, the result of brisk movement to consumers over the past few months.
- The three-in-one strike against big-time glycerine refiner Colgate-Palmolive (*CW*, March 19, p. 13) can be evaluated two opposite ways. The company is a major crude buyer and at the same time consumes much of its refined output. Thus, while some Colgate customers are shopping around to replace the refined withdrawn by the strike, the crude set adrift by the same circumstance is being grabbed by other refiners. This material, of course, will eventually appear in the refined glycerine market, adding to the modicum now available to strapped consumers.

•

Straightforward, though varied, are industry recommendations as to how the Army should dispose of the potentially market-upsetting quantity of off-spec methyl chloride coming from the U.S. nerve gas intermediate plant at Muscle Shoals, Ala.

In a series of meetings during the last fortnight the government was told it should determine whether the material could be used by other agencies; or should be destroyed; or sold by the Army as a raw material for other chlorinated methanes; or sold to captive producers who would cut back their own production; or—and this reluctantly—whether the Army should negotiate sale to present merchant producers, proportionately with their '54 net sales.

One U.S. suggestion turned down by the trade: that methanol be exchanged for the unwanted methyl chloride. The explanation: too impractical because of production problems.

SELECTED CHEMICAL MARKET PRICE CHANGES—WEEK ENDING MARCH 21, 1955

| UP | | Change | New Price | | Change | New Price |
|--------------------------------------|--|--------|-----------|---------------------------------------|--------|-----------|
| Copper oxychloride, dms., works | | \$.02 | \$.46 | Salicylic acid, USP, crystal, | | |
| Naphthalene, crude, imp., 78", large | | | | 200-lb. drums | \$.03 | \$.51 |
| lots | | .005 | .065 | Powdered, 100-lb. drums | .05 | .58 |
| | | | | Sodium salicylate, USP, 200-lb. drums | .03 | .71 |

All prices per pound unless quantity is stated.



NOW...PHENOL WHEN YOU WANT IT

With its new oxychemical plant at Gibbstown, New Jersey, Hercules Powder Company becomes the principal producer of phenol (U.S.P., Synthetic) in the East—and one of the few chemical companies in the entire United States manufacturing phenol by the cumene oxidation process.

Hercules phenol is readily available. The cumene oxidation process—created by Hercules—is your assurance of consistently high purity and uniformity.

Hercules phenol is priced competitively. It is available from tank cars and tank wagons. Short haul shipments in tank wagons make possible the delivery of phenol still in its molten state. For immediate attention to your order, phone or wire:

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HERCULES

PHENOL

(U. S. P., SYNTHETIC)

Making pure Ethylene from Raw Gas

.....

Here, silhouetted against the sky, are giant distillation and absorber towers in the new Canadian Industries Limited Plant at Edmonton, Alberta. Since late last year this plant has been producing highest purity ethylene from natural gas for use in the manufacture of polyethylene.

These operations involve the recovery of ethane from dry gas by absorption at elevated pressure in a "sponge oil." This "sponge oil" is then stripped of its ethane content which in turn is "cracked." The resulting ethylene is then compressed, dried, separated and purified by fractional distillation at 500 p.s.i., and stored under pressure as a liquid.

Graver fabricated four of these towers to ASME standards for this installation. It was extremely important that such equipment be precision made to eliminate the dangers of leakage and distortion.

However, Graver is accustomed to fabricating to the highest standards. Towers, tanks, pressure vessels of every kind are built by Graver to satisfy the most exacting needs of the leading chemical and petroleum companies. For *very* highly specialized jobs, call on Graver.

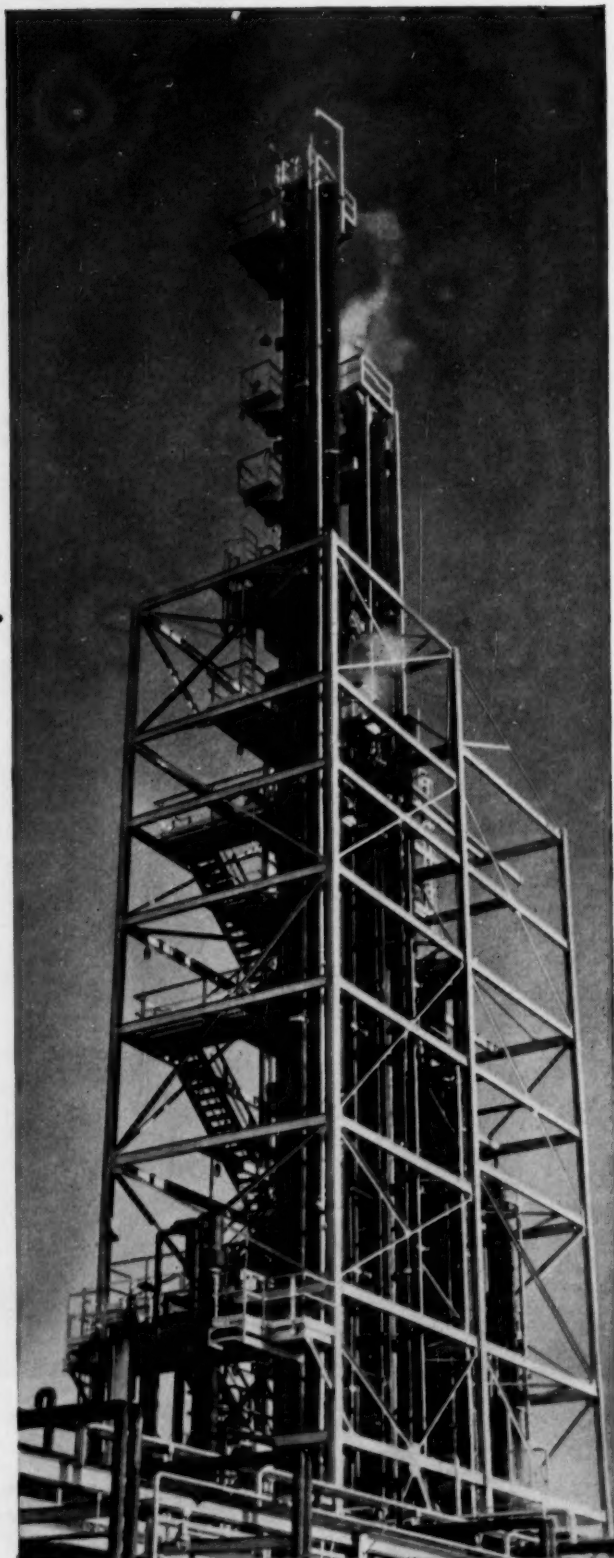
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...specialists in the fabrication of
towers, tanks and process vessels



New BDSA Rundown on Benzene

(millions of gallons)

| How much was available: | 1953 | 1954 |
|-------------------------|-------|-------|
| Production | 256.1 | 234.3 |
| Imports | 18.3 | 10.4 |
| Supply—Total | 274.4 | 244.7 |

These outlets used more in '54 . . .

| | | |
|----------------------|------|------|
| Phenol | 47.8 | 51.3 |
| Synthetic detergents | 23.6 | 24.6 |
| DDT | 8.6 | 9.4 |
| Exports | 1.2 | 6.1 |

. . . and these less:

| | | |
|--|------|------|
| Styrene | 97.3 | 84.8 |
| Aniline | 13.9 | 11.9 |
| Maleic anhydride and acid | 6.4 | 6.0 |
| Dichlorobenzene* | 6.6 | 5.9 |
| Benzene hexachloride | 5.03 | 5.00 |
| Monochlorobenzene* | 2.7 | 2.5 |
| Miscellaneous (syn. fibers, nitro-benzene other than for aniline and DDT, diphenyls, solvents, etc.) | 37.8 | 36.7 |

*Other than that used as an intermediate for phenol, aniline, and DDT.

Benzene Trailblazer

This week chemical marketers at last have salient official figures on U.S. benzene production and use in '53 and '54. They're included in Business & Defense Services Administration's long-awaited first follow-up survey on key chemical commodities. BDSA's Chemical & Rubber Division's deputy director, Lowell B. Kilgore, has dubbed the government benzene study the "first formal chemical commodity survey" conducted to obtain either production capacity or end use consumption."

The benzene questionnaire is believed to have netted responses from some 95% of the manufacturers involved and of the volume consumed. And the benzene follow-up is a forerunner of other thorough mobilization studies to be made on about 50 chemicals.

* Similar chemical surveys conducted by the WPB and the NPA consisted chiefly of estimates made by a relatively few respondents, often on an informal basis.

Purpose of such comprehensive surveys is, of course, to insure availability of chemicals required for a military readiness program on top of estimated civilian demand. And these data, in turn, become the stock in trade of market research men in both government and private operations.

Benzene Countercurrents: Latest figures from BDSA point out that the drop in benzene output from 256.1 million gal. in 1953 to 234.3 million last year was the result of two countercurrent trends. While coke-oven and tar-distilled benzene output slipped some 23% in that period, down to 150.6 million gal., that quantity produced from petroleum raced ahead 40% to 83.7 million in '54. That means, of course, that the petroleum share jumped from a little over 23% of the total turnout to close to 36% last year.

Coke-oven output of benzene fell

back to 69% of capacity in '54 during reduced steel operations after running at 96% in 1953. Result: the share of coke-derived benzene in total benzene production was driven down to 58.1% last year from '53's 69.1%. Anticipated step-up in steel output this year will likely boost benzene from coke-oven operations by some 15-20% over '54's total. But petroleum-based benzene will edge a few percentage points above last year's production.

BDSA rates annual benzene capacity in place as of Jan. 1 at 361.6* million gal., up only 3% from the corresponding date in 1954. Source of the increase was in coke-oven operations.

Down, Then Up: Consumption, too, according to the American Coke and Coal Chemicals Institute, will climb by year's end to 260-265 million gal. (excluding motor-type benzene)—about 8% above '54's total of 244.2 million. Last year's figure was a 12% dip from '51's peak consumption of 277 million gal. By the start of '55, benzene supply was in approximate balance with demand, adjusting after a steep build-up of post-Korean stocks in 1953.

Gleaning from BDSA's amassed end use data: only three benzene outlets increased requirements last year over those in '53: phenol, synthetic detergents, and DDT. Add exports, also, up to 6.1 million gal. from '53's 1.2 million.

However, American Coke and Coal Chemicals Institute estimates for '55 virtually switch the plus and minus columns on benzene outlet requirements. The institute believes that phenol requirements alone of the '54 pacers (*see table*) will advance this year about 9% to 56 million gal., and that synthetic detergent and DDT makers will shave benzene orders to 24.0 million gal. and 8.5 million, respectively. And exports may shrink to only 2 million gal.

But slated for increased benzene orders this year will be these outlets: styrene, 98 million gal.; aniline, 13.5 million; mono- and dichlorobenzene,† 9.5 million; benzenehexachloride, 5 million.

By such analyses as its latest benzene report and those to follow, BDSA raises the accuracy of its estimates, gives greater assurance to those using its data for advance planning.

* Based on 24-hour, 360-day year, but maintaining present output ratios.

† Other than that used as an intermediate for phenol, aniline, and DDT.



ON THE 7TH FLOOR of GSA's Regional Office building in Washington, D.C. . . .

MARKETS



. . . DDT representatives* at bid-opening

Not Always to the Lowest

One afternoon, a fortnight ago, on an upper floor of a somewhat graying building on the corner of 7th and "D" Sts., S.W., in the nation's capital, representatives of most of the country's major DDT producers sat at a long table (*see cut*). All eyes were on the minute hand of the large wall clock. Then, at the stroke of three, a member of General Services Administration's staff began opening a small pile of envelopes.

The proceedings, though outwardly

spiked with joviality, were nonetheless underscored with trenchancy; the latest in a series of bid openings meant, for at least one of the slack-season-struck marketers, a sizable chunk of DDT business.

After the bids were officially screened they were passed around the table. Thus did each company learn how its offer to fill the Foreign Operations Administration-sponsored order—in this instance some 600,000 lbs. of 75% wettable powder, destined for

Karachi, Pakistan—stacked up against other competitively calculated bids.

A few days after the opening, the results of the bidding were disclosed by GSA. Stauffer Chemical won the award with an offer to supply the entire amount, ready for inspection March 25, and at a 23.13¢/lb. FAS, Los Angeles, price. GSA accepted 588,000 lbs. on those terms, will

* Clockwise: Mrs. Dorothy Womble, John Powell Division, Olin Mathieson; Paul Day, Diamond Alkali; Mrs. Lorna Ellis, Niagara Chemical Division, Food Machinery; Mrs. J. L. Foster, Monsanto (*see cover*); Mrs. Esther Lewis, in charge of bid opening, GSA, Region 3; Mrs. M. B. Aikin, Michigan Chemical; R. H. Gilbert, General Chemical; Doug Weiford, Stauffer.



FOA TO GSA: DDT orders for export add up to a multimillion-dollar lift for a seasonally slack market. Left: Philip O'Neil, chief, Requirements Division, Public Health Branch, FOA; right: Clifton E. Mack, commissioner, Federal Supply Service, GSA.



learn what the competition offers.

forego the remaining 12,000 for the nonce. Eight unsuccessful bidders listed prices ranging up to 28¢, with delivery points, for the most part, in the East.

Earlier Stauffer also shared, with Pesticide Export Corp. (New York), a 304,500-lb. FOA shipment of DDT to the Philippines—the companies at that time beat out six others, primarily because they were the only ones to bid on an FAS, West Coast, basis. This, in effect, meant a lower price.

Awarding of these two recent contracts did not generate the hubbub of resentment noticeable in the trade when GSA parceled out this January probably the largest single tender for overseas DDT shipments under FOA aegis. The amount involved: approximately 15 million lbs. going to India, Iran, the Philippines, Pakistan and Indochina.

For some unaccountable reason the government appended to the invitations-to-bid the "distressed labor area" clause. This is the manpower directive of 1952, which essentially directs the agencies to make special efforts to give firms in surplus-labor sections of the country ample opportunity to bid on all proposals and to give preferential treatment to so-called "tie-low" bidders from such areas.

Although application of the directive by GSA may have been technically proper, some critics described



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KAY-FRIES



Cyanoacetamide

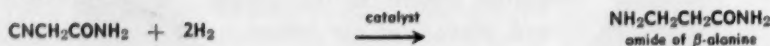
CYANOACETAMIDE (both a nitrile and an amide) is another Kay-Fries intermediate with a cyano-activated methylene group. It is now used in the syntheses of vitamins and barbiturates. Potentially its usefulness can be expanded. It has been suggested as an intermediate for special resins, substituted piperidines and pyridones, new pharmaceuticals and general organic synthesis.

KAY-FRIES SPECIFICATIONS . . .

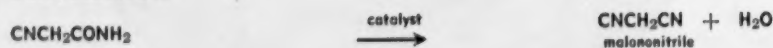
| | |
|----------------------|--|
| purity | ● 99.0% min. |
| melting point | ● 119.0°-122.0°C (meniscus to complete melt) |
| ash | ● .05% max. |
| solubility | ● 1 gm. completely soluble 9 gm. dist.H ₂ O |

Typical reactions of CYANOACETAMIDE

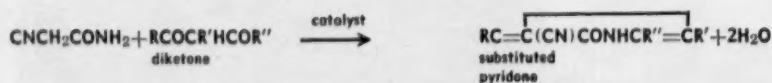
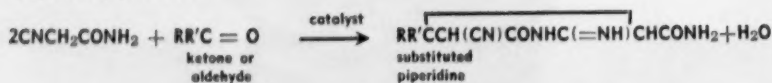
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MARKETS

the move as ill-advised, and as creating many complications and inequities. FOA (and a bit more indirectly, GSA) has been censured by many U.S. industries for purchases from foreign companies, which because of cheap labor, were able to offer lower than U.S. prices.

The controversial "labor" condition had never been applied to a DDT tender, and though it's difficult to pin down why it was included in the big bid, one insistent speculation is this: the agencies hoped to forestall any possible Congressional or industry criticism by favoring districts plagued with a surplus labor problem.

In side-stepping one anticipated volley, the government met head-on the discontented grumblings of low-bidding DDT makers. Because of stated labor-surplus designations by competitors, a low bid was not enough to warrant at least one company's securing a favorably proportionate percentage of the quantity of material it had offered.

It's a moot point whether the complaints were directly responsible, but the fact is that the labor provision did not appear on subsequent DDT invitations. An FOA clarifying directive states in substance, that the distressed labor area clauses will be applied only when there's a likelihood that foreign bidders will participate. Thus, when it's predetermined that domestic firms alone will be involved, contracts will be awarded to the lowest qualified bidder.

And such contracts, for chemicals and other supplies and services, totes up to a multimillion-dollar/year business. In fiscal '54, for example, GSA provided some \$325 million worth directly to federal agencies under contracts and purchases.

As an agent for FOA, GSA alone handled requisitions (*see cuts*, p. 92) in that period totaling \$83.4 million, and awarded contracts amounting to more than \$46 million.

Government requirements for the upcoming year haven't been calculated yet, but chances are they'll top '54's. If you're interested in selling DDT (or any other commodity), GSA asks simply that you write, listing the types of items on which bids would be submitted. The address: Business Service Center, GSA, Room 7110, 7th and "D" Sts., S.W., Washington 25, D.C.

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Overseas Shift Toward Synthetics

The slam-bang price war that sent shudders through the British soap and synthetic detergent industry last fall is still a pleasant memory to the English housewife (CW, Dec. 18, '54, p. 112). It was more than a noisy demonstration in customer pursuit, however—it undoubtedly sped the day when synthetic detergent sales will catch soap sales.

Now, housewives and manufacturers across the channel in France are wondering if Procter & Gamble's entry into the French market—slated for three or four months hence—will touch off similar price clipping there.

In both countries, although synthetic detergent sales are substantial, they haven't yet overtaken soap as they have in the U.S. Estimates are that in England, 35-40% of purchases are now of syndets; in France, about 33%.

The total market abroad is smaller than the 3506-million-lb. U.S. market. Although precise figures aren't available, the World Detergent Congress in Paris last June produced these estimates of 1953 productions: 950-million-lb. total of soaps and syndets in England, 700-million-lb. total in France.

Fighting for leadership are firms closely related to the "Big Three" in the U.S. (Colgate-Palmolive, Lever, P&G), as well as a number of other keen competitors. Here's the way the foreign picture shapes up:

Petroleum's Pets: Because many of the cheaper and more readily available syndets are petroleum-based, oil companies have attained stature in the synthetic detergent field. Shell Oil sells its liquid detergent, Teepol (an alkyl sulfate), industrially and to its employees in both France and Eng-

land. British Petroleum Co. markets a liquid called Byprox in Scotland (and another liquid called Comprox in some other British possessions).

Soap companies, moreover, have pushed into the syndet business, now have the major share. In England, top firms are Unilever, Colgate-Palmolive, and Thomas Headley (P&G owned). (Big British soapers have been slow to offer liquid syndets to the housewife. Crosfields (C.W.G.) Ltd., an intermediate-size firm, makes one of the best known liquids, Quix. Imperial Chemical Industries has its liquid Lissapol for bulk sales.) In France, Lever of France, Cadum (a Colgate subsidiary), and Cotelte and Foucher are currently the major producers. P&G has joined up with another big French soaper, Fournier & Ferrier (Marseille), to make P&G products.

(While P&G has been planning its

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FIG. 2193—Ni-Resist* Gate Valve for 200 Pounds W.O.G.



FIG. 6003 SS—Alloy Steel Gate Valve for 600 Pounds W.S.P.

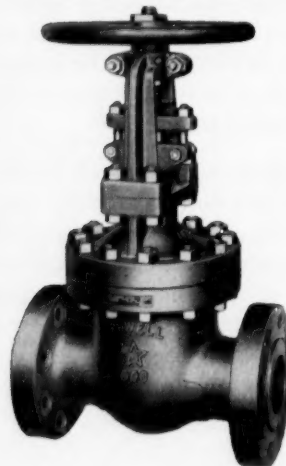
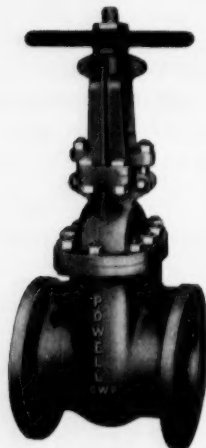


FIG. 2453 G—Stainless Steel O.S.&Y. Gate Valve for 150 Pounds W.P.



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SPECIALTIES

drive into France and other European countries, one of France's largest syndet makers, Sinnova, has established a U.S. affiliate, American Alcolac. Sinnova produces liquid syndets for Cotelte and Foucher; American Alcolac is similarly a raw material source here.)

Name's Familiar: Some synthetic detergents well known in the U.S. are common abroad—e.g., in England, there are Unilever's Surf, Headley's Tide and Dreft, Colgate's Fab. Other big sellers are Omo and Wisk (Unilever; its soaps are Persil, Sunlight, Lux, Lifebuoy); Daz (Headley; soaps: Fairy Soap, Oxydol, Sylvan Flakes. In France, there are Lever's Omo (and Lux and Persil), Cadum's Paic, and Cotelte and Foucher's Lesive La Croix and Mir (liquid).

Suds Bargain: The European customer gets a real bargain in some synthetic detergents. A box of powder syndet that sells for 30¢ or so in the U.S. is about 21¢ in England; soaps are similarly cheaper there.

Wisk, a liquid dishwashing compound, sells for about 21¢/pt. in England; Byprox, about 23¢. Teepol, in gallon containers, brings only \$1.05/gal. These prices compare with going prices of 35¢ or more for 12 oz. of a U.S. liquid like Joy or Liquid Lux.

The prices reflect raw material prices abroad. Fatty alcohols, sulfates and vegetable fats are cheaper there than in the U.S. On the other hand, alkyl aryls are about the same, and polyphosphates and nonionics are much more expensive.

Faster, Better, Safer: Detergent and soap promotion abroad is not unlike that in the U.S. (*see cut*). The products are plugged as getting clothes whiter, leaving colors brighter, that they save time and money, and that they're easy on fabrics, safe for hands.

The safe-for-skin theme gets plenty of attention. Nearly all the products are advertised as leaving hands soft and unirritated. Nevertheless, housewives seem to fuss about "detergent hands" as much as do U.S. women.

Most syndet makers abroad feel that product improvements are cutting detergent complaints. The petroleum-based, branched-chain fatty alcohol sulfates—about the only products available during World War II—weren't too satisfactory. Alkyl naphthalenes and diphenyloxide detergents

came out after the war, were soon followed by sulfates based on natural ("colonial") fats. Alkyl aryl sulfates are currently available, and products with formulations like those here are common.

Despite apparent price advantages enjoyed by the English and French on syndets, few dispute that the U.S. housewife gets top quality for her money. Value has climbed as output has gone up; and competition has increased; chances are syndets will follow the same course in both quality and volume.

Pigment Patents

Paintmakers last week noted with interest the upholding of the two patents of Metals Disintegrating Co. Inc., in a suit against Reynolds Metals Co. The patents concerned the manufacture of "leafing" aluminum powder—the material essential to produce glossy aluminum paints.

Reynolds, one of the major suppliers of these pigments, has been fighting the patents since 1946 (until that time, it had been paying royalties to Metals Disintegrating). Chief U.S. District Court Judge Paul Leahy, in Wilmington, Del., ruled the patents valid—said to be the first time Leahy has ruled a patent valid since he took his place on the bench in 1942. Damages settlement, asked on one patent, has not yet been worked out.

Nonsigners Released

"Fair trade" received another jolt last fortnight, when Judge Robert L. Young in the Richmond, Va. law and equity court ruled that the Virginia fair-trade law's nonsigner clause was unconstitutional.

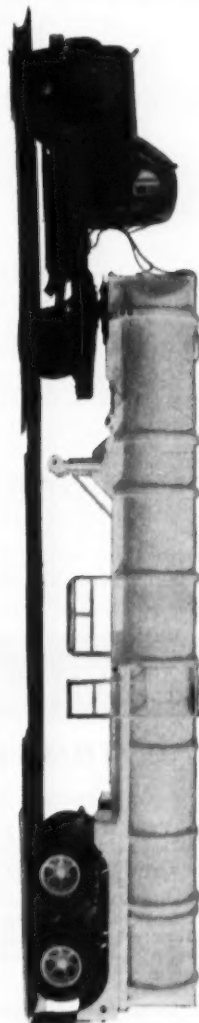
"The nonsigner provision violates the liberty and due process clauses of the Virginia constitution," said Young, and it is "an unlawful delegation of legislative power to private persons."

Unlike two of the recent setbacks for fair trade, this time the suit did not involve a chemical company, but instead, the Benrus Watch Co.

Fly Foe: Pittsburgh Coke & Chemical Co. has just started sale of a bait form of fly killer, called Dipterex-199. A granular product packed in a 1-lb., shaker-top can, Dipterex makes use of the same German-developed in-

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SPECIALTIES

secticide that goes into Pittsburgh's Fly Charmer insect trap.

Pittsburgh is selling its new insecticide through agricultural chemical dealers, suggests it for use around the farm. It is also packed in 10-lb. pails for volume use.

Safety First: Neutralize is a new compound for counteracting acid or alkali chemical burns. Sold by E. D. Bullard Co. (San Francisco), and packed in 4- and 32-oz. polyethylene bottles, it can be applied to eyes or skin. A neutral product, it is a buffering agent that works rapidly to neutralize either acids or alkalies.

Coatings for Industry: Among the latest developments in paints and products for industrial application:

- Corro-Vent, an anticorrosion compound worked out by Corro-Vent, Inc. (Cincinnati) for commercial use. A thermoplastic, resin-based paint, it can be applied by brush, spray, or dipping, dries at room temperature. The product contains a rust-preventer, is said to resist acids, alkali, alcohol, salt, greases and other solvents. It's suggested for metal protection.

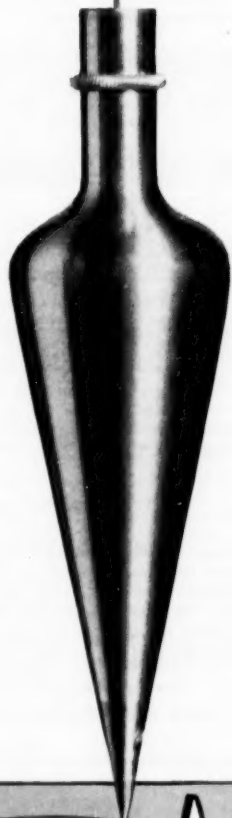
- Pennsylvania Salt Mfg. Co. also has a new anticorrosion compound, Neoline, for fan blades, fume ducts, etc. It can be heat-cured, or air-dried, is applicable to metal, concrete or wood.

- For protection of stored machinery, Nox-Rust Division, Daubert Chemical Co. (Chicago) is now selling Nucle-Oils. Particularly designed for protection of inside metal surfaces, Nucle-Oils are sold in several viscosities.

Lollipop for Ulcers: Cook County (Illinois) Hospital physicians have come up with a novel treatment for ulcers: a sweetened antacid pill kept in the mouth between the tongue and cheek. Components of a typical pill for this use are whole milk, magnesium trisilicate, magnesium oxide, calcium carbonate, and magnesium carbonate.

No Charge: Bigelow-Sanford Carpet Co. is now marketing an aerosol-packed antistatic compound for use on synthetic fabrics and wool. Suggested for use on upholstery, in automobiles, and on rugs, it is said to reduce the chances of annoying shocks.

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P5953 Chemical Week
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SPECIALTIES



BASEMENT BOTTLING: In the shoe polish business, she starts at the bottom.

Starting with a Stylish Shine

Necessity's the mother of invention—and Dorothy Johnson, a mother, is of necessity an inventor. She worked out a polish for pastel shoes because none was available, and now her Johnson's Polish Products (Elgin, Ill.) company has become a leader—and virtually alone—in supplying polishes for light-colored shoes.

Her family-run outfit (*see cut*), only 3½ years old, is currently doing business at a \$200/week (wholesale) clip. Expansion is due any time, since demand for Rainbo polish has strained the basement production facilities of her home, and the big selling season lies ahead.

Forced Start: It hasn't been a simple (or particularly profitable) project to make Johnson's Polish Products so successful. Few businesses are more wrapped in trade secrets than the shoe polish line, and Dorothy Johnson was completely untrained to get into it. But her daughter's pink shoes required cleaning and polishing, and because no firm offered suitable products,* she was forced to experiment on her own.

Then, pleased with results of her home study and work, Mrs. Johnson was encouraged to try and sell her product. In late fall of 1952, she be-

gan selling it in Florida. Later, as she realized the market for her products, she called in a consulting chemist to improve her formulation. But she has retained the manufacturing end.

'Kitchen Chemist': Although the "kitchen chemist" has a tough job these days, Dorothy Johnson has come up with some shrewd merchandising ideas that give her a competitive foothold:

- She's matched her Rainbo polishes to the 12 colors of the Tanners and Shoe Mfgs. leather specifications.
- Selling through agents, she keeps them alive and interested with a frequent newsletter.
- To save money, she secured her own trademark, with the help of government pamphlets.
- As a sales gimmick, she now ships tiny plastic slippers along with orders—suggests dealers display them near polish, sell them if they choose.
- For demonstrators, she buys worn shoes from Goodwill Industries, gives them the Rainbo treatment.

Rainbo pastel polishes were joined late last year by dark-colored polishes and by a suede cleaner. All the polishes are claimed to add shine without cracking, to resist "rub-off" and water streaking. They sell for 25¢ a bottle in shoe, variety and department stores in this country and its territories.

Colorful Career: Although she has

* Competitive products available now include Old Tanner, Hoffsco, Esquire's Scuff-Coat, and Cavalier polishes.

had no formal art training, Mrs. Johnson has not only devised her colorful polishes, but also has been retained as artist and color consultant to an Elgin publishing house.

But chances are, she'll have to give it up. Her polish business, perking along at a \$30/week pace last July, hopped to \$90/week last December, then to the current \$200/week.

Demand will likely go up—new spring fashions show a heavy emphasis on color in shoes and in stockings. Fashion decreed the pastel shoes that created Mrs. Johnson's original problem; now fashion's helping her out.

• Industry Aimed: Among the recently

offered specialties products for industrial use:

- Procol PW, a surface-active agent for dyeing processes. Made by Hart Products Corp. (New York), it is a condensation product of degraded protein and fatty acid. It is said to be odorless and colorless, usable in applications formerly requiring soap.

- Alamask EK and EKm are two new industrial reodorants for the manufacture of varnish inks. Rhodia, Inc. (New York) is producing them.

- Scotch-brand reinforced polyethylene tapes (No. 875 and 877) have been introduced by Minnesota Mining & Mfg. Co. The tapes are strengthened with glass fibers; No. 875

is a pressure-sensitive tape, 877 is designed for heat-bonding.

- Gilbreth Teflon Adhesive has been worked out by the Gilbreth Co. (Philadelphia) to adhere Teflon to itself or to any other material. It is a pressure-sensitive glue with a peel strength of 5 psi., a sheer strength of 25 psi.

Nonprotective Coatings: Rochester, N.Y.'s older buildings should be painted with nonflammable or fire-resistant paints, recommends City Chemist John A. Temmerman. His report, growing from an investigation of city fire causes, suggested water-based or other fireproof paints.

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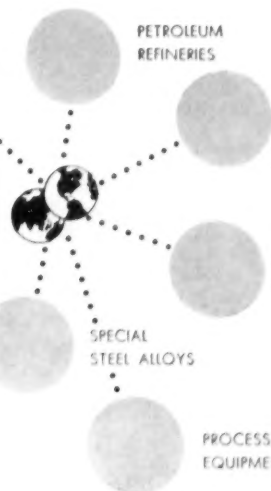
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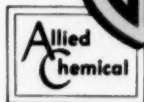
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